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COMPUTERWORLD

THE 32-BIT DESKTOP DAWNS: WINDOWS 95 VS. OS/2 WARP
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LAN management control to improve

Cabletron Spectrum moves into NetWare

By Laura DiDio and Patrick Dryden
ROCHESTER, N.H.

Cabletron Systems, Inc.'s Spectrum, long considered an elegant enterprise management platform, is beefing up its links to mainstream LANs.

To help streamline network supervision, Cabletron is readying its so-called Management Gateway Server for NetWare, which will make all Novell, inc. built-in tools

Cabletron, *page 151*

Spectrum benefits

- Reduces network complexity for the operator
- Reduces network operation costs through localized polling
- Provides flexibility for future capabilities
- Reduces alarms to conserve operator's time
- Increases availability of information throughout the organization

SMS upgrades in the offing from Microsoft

By Steve Moore

Microsoft Corp.'s Systems Management Server will gain several important features — including one designed to make it live up to its messenger-to-the-gods nickname of Hermes — in a series of upgrades beginning this summer, the company confirmed last week.

Since this complex client/server LAN systems management software first shipped last November, users have applauded its PC software-distribution and hardware and software inventory capabilities. SMS runs on Windows NT Server 3.5 and requires Microsoft's SQL Server 4.2.

Key ingredients

But several users interviewed last week said SMS is missing key pieces that would help them more efficiently manage their client/server LANs. Their wish list included enhanced event logging and reporting, software license metering and

Microsoft, *page 16*

Desktop software and support

Quality questioned

By Gary H. Anthes and William Brandel

Calling the software "very, very buggy and very slow," the Du Pont Co. is yanking the latest release of Microsoft Corp.'s Office off thousands of Macintoshes and reinstalling an earlier version.

Du Pont's dramatic action highlights the growing tension between vendors and users about the newest releases of desktop software. Many users say software today is more buggy and poorly supported than it was a few years ago.

COMPUTERWORLD SPECIAL REPORT

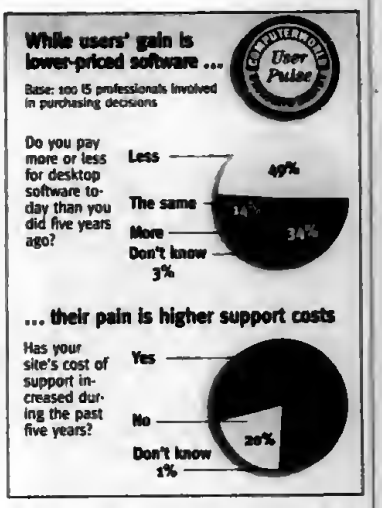
Vendors, facing increased competition and tighter profit margins, respond that users can't have it both ways: inexpensive software and top-notch support. They contend their software is better than ever.

The shift of the support burden from vendor to user has certainly struck a nerve with IS. In an exclusive *Computerworld* survey, two-thirds of 100 information systems professionals said they would accept fewer features in exchange for greater reliability. And 51% said they are more likely now than three years ago to avoid or delay making software upgrades.

For example, reliability and performance issues are precisely what drove Du Pont back to an earlier, more stable version. "Microsoft Office on the Mac is a disaster," said David Pensak, principal consultant for advanced computing technology at the Wilmington, Del.-based chemical giant. Pensak supports users in the company's research units.

Even worse, he said last week, Microsoft is already three months late with a promised

Quality, *page 14*



Terabytes bite IS

By Craig Stedman and Kim S. Nash

Warning: Building and managing gigantic databases may be hazardous to your health. Or at least trying to your soul.

"Nancy Reagan had it right when she said 'Just say no,'" quipped Gary Leek, systems architect for a 1.5-terabyte database being developed at TRW, Inc.'s TRW Information Services division in Orange, Calif. "Nobody wants a database this big. It's just a major pain all around."

Several other information systems managers echoed Leek's half-joking sentiments about terabyte-class relational databases. Nonetheless, a small number of commercial shops with massive amounts of information on their hands are pushing upward into the rarefied air of the truly large database.

One terabyte equals roughly the amount of paper that could be produced from 42,500 trees, according to one storage vendor. Such hu-

Big database, *page 151*

Voice strain plagues some PC users

By Mitch Betts

If the pundits are right about the interface of the future, millions of workers will soon be barking commands at their voice-activated PCs — Open! Copy! Delete! — and dictating letters into the PC microphone.

But some early users of speech-recognition technology find that daying chats with their PC can be a real pain. Anecdotal reports from an Internet discussion group include cases of persistent sore throats, hoarseness and even nodules on the vocal chords.

"After a few months, I noticed that at the end of the day I was hoarse or I could barely speak at all. I found I was cutting back on conversations at work and at home, which was distressing," said John Lehman, a programmer at Lotus Development Corp. in Cambridge, Mass.

Similarly, a 38-year-old programmer in Silicon Valley said he recently left his job partly because of voice strain. The irony is that in both cases, the programmers switched to voice input because their hands were disabled due to repetitive stress injuries from keyboard use.

The mainstream vendors include Dragon Systems, Inc. in Newton, Mass., with its Dragon Dictate for Windows products, and Kurzweil Applied Intelligence, Inc. in Waltham, Mass., with its Voice for Windows product.

"We've heard of isolated incidents, but it

Voice strain, *page 18*

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What's Inside

April 24, 1995

SOUND OFF!

BEST-OF-BREED APPS *vs.* SUITES

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■ Banyan introduces **Vines 6.0**, the first major upgrade to the network operating system in more than a year. Enhancements include guaranteed log-in and integration with Banyan's Distributed Enterprise Management Architecture. **NEWS**, *page 2*

■ Whacked by a quarterly loss, **Lotus** looks for ways to boost sales and profits. **NEWS**, *page 2*. Meanwhile, Lotus' **team computing** is seen as neat technology but limited in its current implementation. **WORKGROUP COMPUTING**, *page 53*

■ IBM's bid to put key Windows 95 code into **OS/2 Warp** may not be enough to draw the system into the mainstream. **NEWS**, *page 4*

■ **D&B Software** users nervously straddle the fence between mainframes and client/server. **NEWS**, *page 6*

■ The mixed bag of **computer industry** financial results for the first quarter of 1995 showed more good news than bad. **NEWS**, *page 8*

■ Pricing on core **database** engines is gradually sinking, but users aren't home free: Vendors are fighting price erosion in several ways. **NEWS**, *Page 12*

■ **McCaw** gets out of the blocks with a **Cellular Digital Packet Data** offering. **NEWS**, *page 24*

■ Chevron and Jonathan Simon, right, hope **groupware** will lead workers at diverse sites to share information about best business practices while cutting travel expenses. **WORKGROUP COMPUTING**, *page 53*

■ The **Macintosh** database market has new entries on the way. **DESKTOP COMPUTING**, *page 43*

How do you measure up?

How does your IS department compare with the Computerworld Premier 100? Fill out the Premier 100 survey, and we'll send you a free report showing how your operation compares with Premier 100 averages. Consolidated information from the surveys we collect may be published in a future Premier 100 issue. Send a request on company letterhead to Paul Gillin, Editor, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701 or E-mail to survey@cw.com.

■ **Internet** caretakers say it is at a crossroad. **ENTERPRISE NETWORKING**, *page 67*

■ Users of **Hitachi**'s new Skyline mainframes can expect to pay more for software than they do now. **LARGE SYSTEMS**, *page 81*

■ Object-oriented middleware holds the promise of a new generation of transaction processing networks. **APPLICATION DEVELOPMENT**, *page 91*

■ Now is the time for **IS professionals** to think about summertime professional development programs. **MANAGEMENT**, *page 106*

■ Users testing **32-bit operating systems** say they like the technology in IBM's OS/2. However, when it comes to moving ahead, their first choice will likely be related to their installed base — and that means a Microsoft offering. **CW GUIDE**, *page 113*

A day with an Internet expert

Christine Garland

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■ Upgrade ouch! Managers dread the **cost of training** associated with upgrading to a 32-bit operating environment. **MARKETPLACE**, *page 138*

■ **Bill Laberis** urges Digital to play up its greatest strength — networking expertise. **VIEWPOINT**, *page 36*

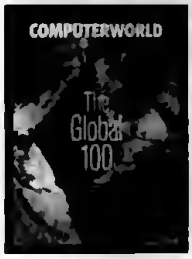
■ **Michael Cohn** explores the bizarre world of computer pricing. **VIEWPOINT**, *page 37*

■ **Esther Dyson** says all parties can benefit under one new business model for the software industries. **VIEWPOINT**, *page 37*

■ **Gordon Bell** warns of the hidden taxes assessed by the Unix Cartel. **VIEWPOINT**, *page 40*

■ **Charles Babcock** warns buyers to ask hard questions when shopping for parallel processing database systems. **COMMENTARY**, *page 152*

COMING NEXT WEEK



Computerworld's first annual *Global 100* presents the outstanding users of information technology from around the world. From New Delhi to New York, find out how the top IS organizations maintain their competitive edge.

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Executive Briefing

Get out your walking shoes: It's Comdex time in Atlanta. Corporate users have a message for their vendors: Lower prices and new features are nice, but they shouldn't come at the expense of **software quality**. Those users say, "Kill the bugs." *Cover 1*. **Product introductions will be relatively scarce**, with Lotus' replacement of Ami Pro with Word Pro and a Microsoft Windows 95 utility heading the list. *Pages 14 to 16*. However, **32-bit operating systems** will be in the spotlight. *Page 113*

The Profit Center Paradox: Do general managers *really* want IS to be run as a business? Not necessarily. While many other companies have closed down their IS profit centers, some, such as AMR, CBS, Kemper and Brown-Forman, are succeeding. The key is for IS to meet business objectives without alienating non-IS management, according to AMR's former CIO, **Max Hopper**. *Page 101*. Hopper also shares his views on coping with tight budgets. *Page 40*

Building and managing terabyte-class databases poses daunting hurdles for companies, but a small number of commercial shops are climbing into the rarefied air of the truly large database. *Cover 1*

Companies continue to throw big bucks after client/server technology, even though it has failed to deliver on promises of reduced costs or shorter development cycles. *Page 7*

On site this week: A fail-safe network is working at **Swissair**. *Page 28*. Built-in CD-ROMs helped sell **MCI** on notebooks. *Page 43*. **Chevron** rolls out a discussion database to facilitate communication among remote sites. *Page 53*. The **Kentucky** state government tries a low-cost information superhighway. *Page 67*. **Great Western Bank** is outsourcing most of its IS functions. *Page 72*. Mainframe technology keeps **Pacific Bell's** voice-mail service running. *Page 88*. An expert system helps **Canada Trust** fight fraud. *Page 82*. The **Toronto Transit Commission** goes client/server. *Page 92*.

The 5th Wave *by* Rich Tennant

Vines 6.0 guarantees log-in

By Laura DiDio

At its annual users group meeting in Orlando, Fla., this week, Banyan Systems, Inc. will unveil the first major upgrade to its core network operating system in more than a year.

Vines 6.0 will bundle several key features such as network management and intelligent messaging capabilities — formerly separate product offerings — into the core network operating system for the same price as prior versions of Vines, confirmed Bob Renpsch, product line manager for Vines, last week (see story at right).

For users, Vines 6.0 represents an important next step in Banyan's ongoing strategy to open up the Vines architecture.

Beta users of Vines 6.0 cited their new ability to access the underlying Unix kernel in Vines to make changes and fixes themselves as a crucial example of Banyan's willingness to open up the architecture.

"The ability to directly access the Unix kernel to make changes to the core Unix operating system gives me the flexibility to perform fixes to servers and files without having to call a Banyan engineer and have them dial into my server and find the problem," said Don Kilgour, an information systems analyst at Stentor, Inc. in Ottawa. "Now, we can do it ourselves. It's a big time saver since we have 500 servers."

In four months of beta usage, Kilgour said he encountered only a few minor bugs that Banyan has since fixed. "Vines 6.0 was a quick, straightforward installation that took us about 20 minutes maximum for each server," he said.

Frances Ward, network administrator at the Florida Department of Insurance in Tallahassee, is another longtime user eagerly anticipating the Vines 6.0 release.

"We have 60 [Vines] servers throughout Florida, and the guaranteed log-in facility as well as the new [Enterprise Network Services] management tools will ensure that users can always access the network," Ward said. She was also enthusiastic about Banyan's new native TCP/IP support in Vines 6.0., which she said will eliminate the need to run dual- and triple-protocol stacks on users' PCs

Dave Capuccio, an analyst at Gartner Group, Inc. in Stamford, Conn., also gave a thumbs-up to the features in Vines 6.0 and their appeal to the installed base. But he offered some caveats about Banyan's ability to appeal to large numbers of new accounts.

"The lack of [independent software vendor] support continues to be a limiting factor for Banyan. Many of the Fortune 1,000 customers i talk to say they buy NetWare not for the technology, but for all the third-party support," Capuccio said, referring to the thousands of Novell independent software vendors that far outnumber the less than two dozen Banyan independent software vendors.

Vines 6 0 will ship May 30. Pricing ranges from $7,995 for 50 users, $9,995 for 100 users, $14,995 for 250 users and up to $49,995 for 1,000 users.

New buds on the Vine

The enhancements in Banyan's Vines 6.0 include the following:

▶ Guaranteed user log-in to the StreetTalk directory services component, regardless of whether or not the user's home server is down.

▶ Integration with Banyan's Distributed Enterprise Management Architecture based on the Simple Network Management Protocol (SNMP) that simplifies administration tasks and enables users to deploy any SNMP-based network management platform.

▶ The latest revision of Banyan's Intelligent Messaging Backbone, which is the framework that users need to deploy mail and messaging-enabled workflow, groupware, calendaring and forms-based routing applications.

▶ Enterprise Network Services Windows-based management tools that trigger alarms to warn users of specific network-related events such as full mailboxes, inability to deliver mail messages and downed network connections.

Sybase to buy tools developer

By Elizabeth Heichler and Marc Ferranti

Sybase, Inc.'s Powersoft unit is expected to sign a deal today to acquire Paris-based tools developer SDP SA, according to sources close to the negotiations in France.

The acquisition would add a data modeling tool to the portfolio of Concord, Mass.-based Powersoft. Analysts said it would give the company's PowerBuilder application development product better design capabilities.

"I can confirm that we are in negotiations with Sybase, but we have not signed anything up to this point," said Yves De Montcheuil, an SDP spokesman.

SDP's flagship product S-Designor is "a very nice tool for data modeling and a very good addition to PowerBuilder," said an analyst familiar with the deal but who asked not to be identified.

New design method

The problem with many client-side development tools is that people develop without planning. But with S-Designor, developers are expected to do design and data modeling before they begin programming the application, the analyst explained. S-Designor lets PowerBuilder users optimize databases so that the applications they design perform more efficiently.

A Powersoft spokeswoman declined to comment on reports of a pending acquisition.

SDP was founded in 1983 by Serge Levy, its current president, and reported revenue of $10.3 million last year. Its U.S. operations are located in Westchester, Ill.

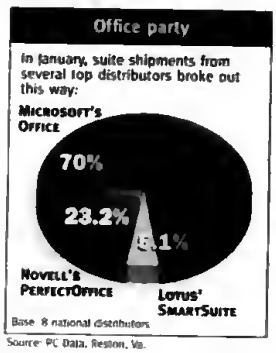
Ferranti is Paris bureau chief at the IDG News Service.

Lotus losses inspire desktop rehaul

By William Brandel

It's always darkest before dawn — or so hopes Lotus Development Corp.

Lotus' first quarter proved to be a scary one for the developer it not only lost $17.5 million on sales of $203 million — its first operating loss ever — but it also saw its applications suite share slip to third place behind an up-and-coming entry from WordPerfect, the Novell, Inc. Applications Group. The poor showing forced admissions that Notes growth was disappointing and that the company can no longer count on desktop revenue as its primary revenue source.



Worse, its desktop fortunes will out change for at least one more quarter, according to officials who plan to cut costs by $50 million, cut staff by an undetermined number and revamp the company into four product groups.

Falling short

But of more concern to users, a humbled Lotus appears ready to shore up the glaring weakness in its desktop application strategy: the Ami Pro word processor.

Lotus will take its first step toward redemption this week at Comdex/Spring '95 in Atlanta, where it will introduce a rewritten and renamed word processor called Word Pro. The application boasts 1,500 new features and is due to ship this summer.

The completely rewritten product also represents Lotus' first application based on its common code strategy. This strategy calls for using the same base code to run on 16-bit Microsoft Corp. Windows and Windows 95, and IBM OS/2 applications. The three platforms will share 95% of the same code, said Bill Jones, senior director of Lotus' desktop products group.

Lotus is the first developer to implement this strategy.

These changes are key. Analysts last week said the suite market has been a disaster waiting to happen to Lotus. Until now, Lotus has staked its suite fortunes on the success of its popular 1-2-3 spreadsheet, boistered by its highly regarded Freelance Graphics application.

Unfortunately for Lotus, it is word processors that sell suites — and Lotus' Ami Pro has perennially held the distant No. 3 position in that market. However, with Word Pro, Lotus is launching a more competitive offering.

Much hinges on the product's reception as far as Lotus' future in the desktop arena, as the last quarter makes clear. Lotus was rocked by tough competition from its two desktop rivals, particularly the PerfectOffice suite from WordPerfect.

By developing for three platforms with one code base, Lotus will "literally save millions of dollars," in development and testing costs Jones said.

No more weak link

The revitalized word processor, 3½ years in the making, is concrete proof that Lotus has accepted that Ami Pro has been the weak link in its desktop strategy.

"It's critical that Lotus delivers a much better application than it has with Ami Pro," said Stella Fox, a systems engineer at Fluor Daniel, Inc., a multinational engineering firm in Irvine, Calif. In fact, Lotus could lose a 7,000-copy SmartSuite account at Fluor Daniel if the new word processor is not as good as WordPerfect or Microsoft's Word, she said.

If it is not, "there's serious discussion about moving to WordPerfect or Microsoft," Fox said. "If the product lives up to the demonstration we've seen, we could stay with it."

Those who have seen the product said it does. "I would say that Lotus finally has a word processor that can compete," said Greg Kozak, a beta tester and consultant at Hewitt Associates, LLC in Lincolnshire, Ill.

Lotus' desktop performance could use the boost. Last week, after posting its first loss, the company announced just $118 million in desktop applications revenue for its first quarter of this year.

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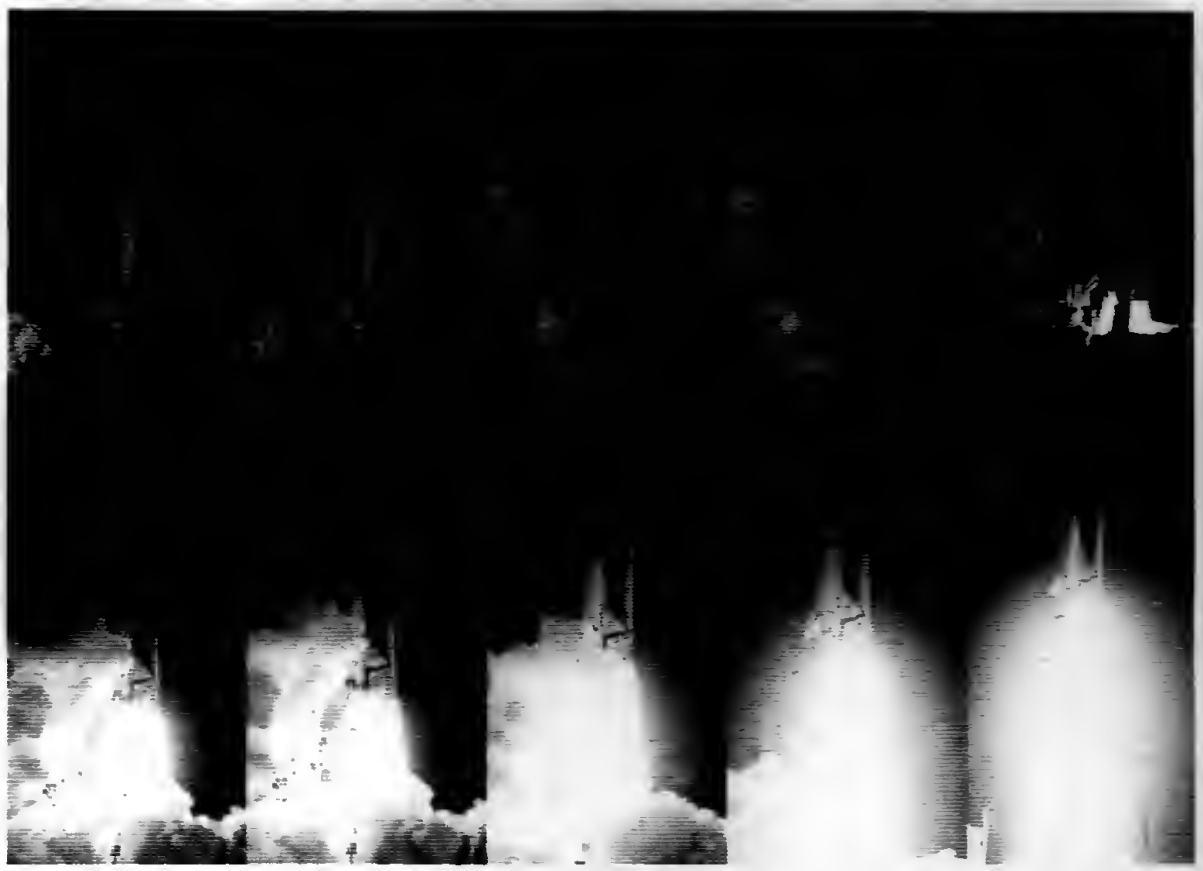

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IBM plan to lure Windows developers looks bleak

By Stuart J. Johnston and Lisa Picarille

IBM thinks it has finally found the right tack to lure Windows developers into the OS/2 fold — by cloning some key Microsoft Corp. programming interfaces — but analysts, developers and users last week expressed doubts.

Without more applications for OS/2 and the eventual ability to run Microsoft's Windows 95 32-bit applications, some users said they see no reason to purchase OS/2.

"In the long term, I still don't understand how they're going to get OS/2 out of a niche market," said Brian Modra, assistant city manager for the city of San Carlos, Calif. "I think they have to make OS/2 fully Windows 95 compatible. Today, [IBM is] still not fully compatible with Windows for Workgroups, and they had the source code for that."

Windows 95 subset on the way

In a move to get reticent developers halfway there, Lee Reiswig, general manager of IBM's Personal Software Products division, said in mid-April that a subset of Windows 95 application programming interfaces (API) will be included in the next release of OS/2 Warp [CW, April 17].

IBM has not announced a release date for that version yet, but independent software vendors will receive the API subset in the next 30 to 45 days as a software developer's kit, said Wally Casey, director of marketing for IBM's Personal Software Products group.

Supporting 100 or more 32-bit Windows 95 APIs that are similar to those in OS/2 means developers would be able to write both OS/2 and Windows 95 versions of their applications from the same code base — up to a point. Adding the Win32 APIs also simplifies the development process for OS/2 vendors, who can then create Windows 95 versions of their OS/2 applications.

Several major developers, including Sybase, Inc. and WordPerfect, the Novell Inc. Applications Group, are seriously interested in IBM's tack. Other developers said they would consider OS/2 development if the Win32 APIs were added.

Beyond that, however, developers would still have to do separate coding for each environment, so IBM's move would take only some of the sting out of a thorny issue. And that may not be enough.

Although IBM gave few other details, sources close to the companies said Lotus Development Corp. is working on the coding project, which is called Springboard. Longer term, sources said IBM is in discussions with Insignia Solutions, Inc. in Mountain View, Calif., which Microsoft has licensed to use Windows 95 source code in building emulators for other platforms (see chart).

Either way, some analysts question whether the fundamental concepts behind IBM's moves are sound.

"I think IBM is confusing the means with the end," said David Card, director of PC software research at market researcher International Data Corp. in Mountain View, Calif. "The end is getting back some control of the desktop operating system [from Microsoft], and that means the API."

If IBM were only going to mimic the Windows 95 API, then it would be conceding to Microsoft, Card said. But after attending a briefing, Card said he is convinced IBM is taking the right approach.

Casey responded, "We are not validating the Win32 API. We are removing the arbitrary differences between the base level APIs between the two operating systems. This gives developers the opportunity to focus on developing applications that leverage OS/2's WorkPlace Shell and object advantages."

Because of fundamental differences, however, IBM may have trouble delivering much commonality between the two systems, one Microsoft official said.

"There are around 2,600 APIs in [Windows 95], and only about 300 are somewhat similar" to APIs in OS/2, said Yusuf Mehdi, a product manager in Microsoft Corp.'s Personal Systems division. Providing the equivalent of just one critical set of those APIs, such as those enabling an application to communicate with the operating system, could force IBM to rearchitect OS/2.

IBM is working with Insignia Solutions to make OS/2 Warp compatible with other operating systems

INSIGNIA'S EMULATION PRODUCTS

Code-named Stringfellow

- Lets users run Windows 3.1 applications on the PowerPC platform.
- Runs on the PowerPC with OS/2, Windows NT and AIX.
- Beta version will be released this summer.
- Will ship by the end of the year.

Code-named Phantom

- Lets users run Windows 95 applications (DOS, Windows and Win32) on the PowerPC platform.
- Runs on the PowerPC with OS/2, Windows NT and AIX.
- Beta version will be released this summer.
- Will ship in Q1 1996.

Report: Users see Exchange as message platform only

By Saruchi Mohan

■ Despite all the vendor hype about collaborative computing, most users upgrading to Microsoft Corp.'s Exchange client/server computing platform will use it only for messaging. For groupware-type capabilities, they will look to other options.

These are the findings of a soon-to-be-released report, "Microsoft Exchange: Myths and Realities." Written by Creative Networks, Inc. in Palo Alto, Calif., the report is based on a survey of 32 large Microsoft Mail customers encompassing more than 21,000 employees. Of those, 40% are Exchange beta sites.

These "people see Exchange as a messaging platform and groupware as separate," said analyst Nina Burns, the report's author. "For groupware, they are using Notes in the same environment." Although predominantly Microsoft Mail users, the sites have pockets of Lotus Development Corp.'s CC:Mail, which they are dropping for Microsoft's Mail. But at the same time, they are buying Lotus' Notes.

This is a distinct change from a year ago, when users were all over the map with their expectations of Exchange, Burns said. Users have now become more realistic and are looking at the product only as an upgrade to Microsoft Mail, she said, rather than expecting Microsoft to provide rich workflow automation as promised, at least in the initial release. In the long term, the users interviewed said they may look to Exchange for workflow and document management functions, which are not there yet, she said.

"We're going to use it as a mail upgrade," said Jon Simon, a systems analyst at Chevron U.S.A. Production Co. in Houston, who uses Microsoft Mail and Collabra Software, Inc.'s Share 1.0 for group discussions (see story, page 53). Using Exchange for collaborative computing will depend on "how well Collabra Share integrates with Exchange," he said, adding that Exchange does not have the full-text search features that Collabra offers.

Although bullish about the use of Exchange for features other than electronic mail, Simon said that for now he would "migrate all the Microsoft Mail users to Exchange and take Collabra with it."

Dean Brown, a systems support analyst at Sara Lee Intimates in Winston-Salem, N.C., is not even so sure he will migrate his users to Exchange. He said he is happy with Microsoft Mail and committed to using Novell, Inc.'s NetWare network operating system.

Brown said he "did not have a warm feeling about them requiring NT. But we will take a good look." Were he to upgrade, Brown said he would use Exchange for E-mail only and use Notes for groupware because it works well in a NetWare environment.

But whatever Brown's feelings about Microsoft's Windows NT, he will have to deploy the operating system if he ever decides to migrate to Exchange. Indeed, Burns said, this is Microsoft's intention. "Microsoft wants to use Exchange as the Trojan horse into NetWare. That's their goal. That's why they are not focusing much on the groupware aspect [of Exchange] initially."

The good news about Exchange . . .

- X.400-based and X.500-based
- Has a client/server version
- Has a calendaring/scheduling feature

. . . is offset by the bad news

- Behind schedule
- Key features missing
- No directory key
- Tied exclusively to Windows NT

Open window

This could be an opportunity for a competitor such as IBM, which is scheduled to ship its WorkGroup group communications platform at the end of May. But, said Dan Blum, principal at Rapport Communications in Silver Spring, Md., "They don't have a messaging installed base. Microsoft and Lotus have been promising their products for years, and people are expecting them."

IBM has so far failed to market a coherent package to compete directly with Microsoft's BackOffice suite, even though it has all the components. BackOffice comprises Exchange, SNA Server, Systems Management Server, SQL Server and Windows NT Server.

"We compete against that today," said Steve Mills, general manager of IBM Software Solutions in Somers, N.Y. He cited the corresponding components in IBM's repertoire: WorkGroup, CommunicationsManager/2, NetView for OS/2 and Windows, DB2 for OS/2 with a Windows version under development, and OS/2.

"We are looking at common configurations customers are buying from us and creating packages," Mills said. Although the company has no plans to come up with a name to identify a competitor to BackOffice, user demand might change that, he said.

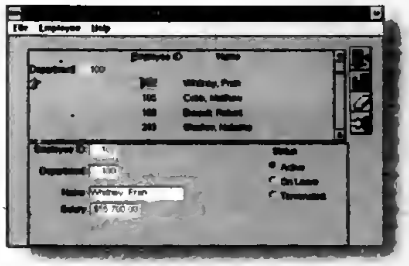
"They have everything now that others have yet to get together," said Ron Rassner, a vice president at Creative Networks, referring to IBM's components, all of which are complete. Exchange, on the other hand, has not been released but is due to ship by year's end. "This is going to be a mind share battle," he said.

Chevron plans to keep people talking. See page 53.

DEVELOPER PRODUCTIVITY COMPARISON

Sybase

PowerBuilder 4.0



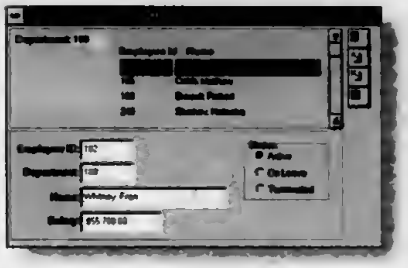
52 lines of code

```
Application.Open
SQLCA.DBMS=ProfileString("PB.INI","Data
base","DBMS"," ")
SQLCA.DbParm=ProfileString("PB.INI","Da
tabase","DbParm"," ")
open(w_employees)
Application.Close
DISCONNECT using SQLCA;
IF SQLCA.SQLCODE <> 0 THEN
  ROLLBACK using SQLCA;
  MessageBox("Disconnect",SQLCA.SQLER-
RTEXT)
END IF
MasterWindow.Open
CONNECT using SQLCA;
IF SQLCA.SQLCODE <> 0 THEN
  MessageBox("Connect
Error",SQLCA.SQLERRTEXT)
  HALT
END IF
dw_master.settransobject ( sqlca )
dw_detail.settransobject ( sqlca )
IF dw_master.Retrieve() = -1 THEN
  ROLLBACK using SQLCA;
  MessageBox("Retrieve","Retrieve Failed")
```

** Taken directly from "PowerBuilder Getting Started"
© 1991-1994 By Powersoft Corporation

Oracle

Developer/2000



4 lines of code

```
exit_form;
create_record;
delete_record;
commit_form;
```

It's amazing how many lines of code you'll find behind the exact same application.

These two programs do exactly the same thing: create a Windows application that retrieves and updates employee information stored on a database server. The 52 line PowerBuilder application was taken directly from the PowerBuilder manual. Oracle's new Developer/2000™ implements the identical application in just 4 lines of code.

If you want to experience the productivity benefits of second generation client/server tools call **1-800-633-1071, Ext. 8168.**

ORACLE

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D&B users eye client/server, but many keep big iron faith

By Neal Weinberg
ATLANTA

Coexistence was the rallying cry of Dun & Bradstreet Software users last week, who seem to be keeping one foot firmly on mainframe soil while dipping a toe into the untested waters of client/server.

Under internal pressure to make data more accessible — but wary of getting in over their heads — users at the company's Business and Technology Solutions Conference here were jittery about plunging ahead with SmartStream, D&B Software's client/server software.

"We're being swept along like everybody else, but we don't want to be on the bleeding edge," said Roy Crain, a senior analyst at Gaylord Entertainment Co. in Nashville. "We're afraid there will be enough bleeding when the time comes."

Crain, whose company owns the Grand Ole Opry, has IBM mainframes that are "starting to show their age." He is being pushed to make mainframe data more available throughout the company.

But Crain said he remains skittish about putting mission-critical applications on an open platform, citing concerns about staff training, reliability and support.

Chuck Cooper, manager of corporate information technology at Weyerhaeuser Co. in Tacoma, Wash., was also in a "show me" mood. The company is using SmartStream to move human resources information off its mainframe. But before he migrates financial applications, Cooper said he wants to see the software become more robust.

He is under the gun from Sally Cowan, Weyerhaeuser's director of consolidations, who wants "a seamless bridge" from a client on her desktop to the mainframe so she can do sophisticated analysis of financial data.

Migration trek

Similarly, Gordon Underwood, information services manager at the $10 billion Texas Employees Retirement System, is warily looking at SmartStream as a way to move financial applications off his Amdahl Corp. mainframe.

While users are searching for ways to migrate, they still want D&B Software to support big iron. Fred Neumann, a technical specialist at Levi Strauss Associates, Inc. in San Francisco, needs to respond to internal demands for "more and faster reporting."

But Neumann said he does not have the funding to make major changes, so he is looking to keep his mainframe applications updated through the rest of the decade.

D&B Software is working to satisfy such user concerns, said Colleen Niven, director of product management. She said peaceful coexistence seems to be the current trend, with companies typically moving one application, such as human resources, to client/server. Next on the list is usually a decision-support application; the final and most traumatic step is payroll and financial records.

The company recognized the popularity of the coexistence strategy when it released SmartStream Connect, which allows two-way data sharing between mainframe and client/server applications [CW, March 20].

Not everyone is pussyfooting around client/server, however. The state of North Carolina is going ahead with a project to move financial data onto Unix servers and into the hands of department heads.

Charles H. Cooper, assistant state controller, is consolidating financial reporting from state agencies on an IBM mainframe, then moving the data out to the agencies over a wide-area network.

CEO MacIntyre hinges company growth on SmartStream

Dun & Bradstreet Software may be working to keep its mainframe customers happy with coexistence plans, but client/server is clearly the fixed star guiding its future.

In a recent interview with *Computerworld Singapore*, Douglas MacIntyre, chief executive officer at D&B Software, said the growth of the software company is "fueled by SmartStream."

SmartStream is D&B Software's set of client/server applications, which typically starts at $100,000. It includes financials, human resources and manufacturing modules.

MacIntyre said SmartStream sales in the first quarter of 1995 were five times those of last year's first quarter. He also said the company will spend an additional $45 million this year in upgrades and support of its client/server applications by year's end, a move analysts said is critical.

Ed Black, an analyst at Aberdeen Group in Boston, said he was surprised at how much money D&B is pouring into SmartStream. "They are betting the company on making this stuff viable," Black said.

"They definitely need a more robust, integrated applications suite," said Clare Gillan, an analyst at International Data Corp. in Framingham, Mass. "They lost their lead to SAP, but there's still substantial opportunity for them to make money in this area."

SAP AG has emerged as the top gun in the client/server applications arena.

MacIntyre outlined the following SmartStream client/server product plans for this year:

- The bulk of its human resources modules are due out this fall, with payroll and benefits coming in October.
- The manufacturing and distribution modules will be bulked up this fall, with the order management and inventory management modules receiving a great deal of functionality. Shop floor control and resource planning capabilities are also on the fall schedule.
- A point release of SmartStream, dubbed Release 3.1 and scheduled for early summer, will include improvements to the financial applications. Banking-specific features will top the list of new functions. — *Rosemary Cafasso and Leong Yin Leng*

Revenue up, profit flat

D&B Software's corporate parent, Dun & Bradstreet Corp. in Wilton, Conn., last week reported first-quarter sales of $1.2 billion, a 9% increase from the $1.1 billion reported for the same quarter last year. The $109 million first-quarter profit was essentially unchanged from a year ago. The low profit was expected in light of significant cyclical decline at Moody's Investors Service and companywide increases in investment spending.

Still more utilities on burner for Win 95

By Stuart J. Johnston

Even though Windows 95 will include every utility but the kitchen sink when it ships later this year, Microsoft Corp. will announce this week at Windows World in Atlanta an add-on package for users who want even more functions.

Microsoft Plus will include an intelligent systems agent that can perform a number of disk maintenance functions such as defragmenting hard disks or compressing files in the background, said Alec Saunders, a product manager at Microsoft's Personal Operating Systems division.

The package will also include an Internet browser, called Internet Explorer, that will include the ability to create Windows 95 "shortcuts" to locations on the Internet.

A triple plus for Microsoft

Microsoft Plus for Windows 95 provides the following:

Intelligent Systems Agent for maintaining disks

- Allows users to schedule disk maintenance or do it on the fly
- Handles disk defragmentation
- Compresses/decompresses individual files
- Adds two new levels of compression

Internet Jumpstart Kit

- Provides a World-Wide Web browser called Internet Explorer, which lets users create Windows 95 shortcuts

Additional screen savers

One reason the tools in the package will not be in Windows is that they generally require a 486-based or Intel Corp. Pentium-based PC to run well, Saunders said.

Disk file fragmentation is a chronic problem on computer hard disks, but defragmenting those files is frequently the last item on most users' agendas, even though it eventually leads to serious degradation in disk drive performance.

A disk defragmenter neatly rewrites all portions of each fragmented file into one continuous stream of data on contiguous sectors of the disk, thereby restoring optimal disk access speeds.

Not users' favorite task

Unfortunately, getting users to regularly run defragmenting utilities is akin to pulling teeth, said Hank Coleman, chief financial officer at Altec Corp. in Dallas. The company's Southern Hospitality Systems unit develops and deploys Windows-based point-of-sale business software for hotels and restaurants, which are largely turnkey systems for nontechnical users.

The Plus package's intelligent agent can run the utility on a time schedule — perhaps in the middle of the night or even like a screen saver — thus saving users from periodically having to run a defragmentation utility.

Coleman sees this feature as a compelling reason to deploy the Plus package to many of Altec's users because its function would be completely transparent to them.

"We had one customer with 75M bytes in one database that was [having] 6,000 transactions per hour, and they had fragmented their disk beyond imagination, and that was just in one location," Coleman explained.

The intelligent agent can also be used to perform other disk maintenance tasks, such as compressing files that have not been accessed during a specified time period so they do not take as much space on the disk.

But the package will not appeal to everyone.

"It has limited utility from my perspective because we don't do very much with local hard drives," said Greg Scott, information services manager at the College of Business at Oregon State University in Corvallis. "That's why we have 60G bytes of network storage."

Users like the technology in OS/2, but their installed base of Microsoft products keeps them faithful to Windows and NT. See CW Guide, page 113.

IS undeterred by complexities of client/server

By Julia King

Companies continue to sink megabucks into client/server technology despite its widespread failure to deliver lower information processing costs or speed systems development, according to a study released last week.

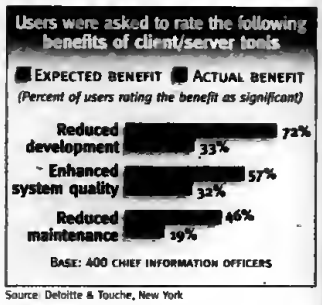
Also, larger companies in particular plan to increase the complexity of their client/server architectures even though they cannot find enough experts to run their current systems.

These are among the findings in a recent survey of more than 400 information systems executives conducted by Deloitte & Touche in New York.

The survey also found the following:

- Only 50% of IS executives who expected benefits from using client/server tools actually realized them.
- On average, the IS budget is 16% higher at companies where more than 25% of applications run on advanced client/server architectures.
- In 1994, 43% of all applications ran under client/server; 27% did in 1993.

But what the study does not measure is how and where client/server has benefited companies, which some users said has little to do with cost or time savings.



Source: Deloitte & Touche, New York

Vendors as well as IS executives sold upper management on client/server technologies "for all the wrong reasons," according to Charles Popper, chief information officer at Merck & Co. in Whitehouse Station, N.J.

"For the most part, the dissatisfaction we've seen relates to the cost of supporting client/server," he said. "But the value comes from putting data together in new ways, not reducing costs."

Merck, which has 15,000 desktop PCs, has moved some of its financial and human resources systems to client/server technology. Other client/server projects under way include systems for supply chain management and clinical applications, Popper said.

The survey results repeatedly show that "the industry violated the 'Paul Masson' rule," said Steven Pliskin, a principal at Deloitte & Touche in Chicago. "They sold an awful lot of technology before its time."

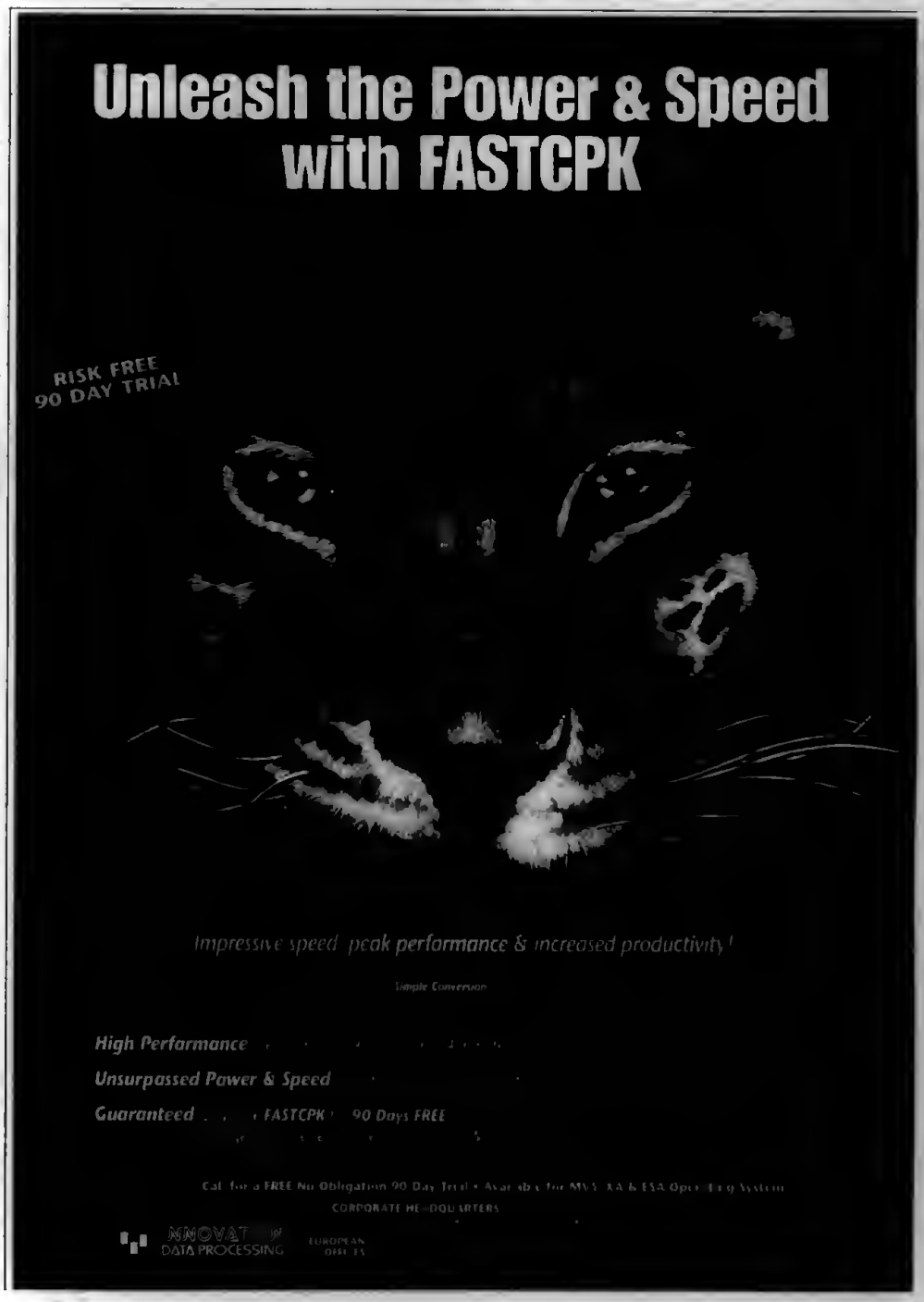
But last week, IS managers said their companies remain eager to buy into client/server, primarily because it enables businesspeople to easily access and use data for tasks such as identifying new markets and closing sales.

"Client/server tool sets provide easier manipulation of raw data so more ad hoc reporting can be done," said Hank Leingang, senior vice president and CIO at Viacom, Inc. in New York.

Finding experienced people to design and build client/server systems remains a problem, however. Last year, 79% of IS managers had difficulty recruiting technical architects and distributed database experts, the study noted. Graphical user interface designers and data modeling experts were also in short supply.

Nonetheless, companies show no signs of backing off from more advanced client/server architectures, which the study predicted will run 32% of all applications by 1996, more than twice last year's figure of 14%.

Yet user companies showed no signs of a comparable increase in their training budgets, which in 1994 averaged slightly more than 3% of the overall IS budget at companies where 25% or more applications are client/server-based. At companies where client/server applications account for less than 25% of all systems, training expenditures averaged 1.9% of the overall IS budget, the study said.



Surprising numbers mark first quarter

Analysts' projections come up short as many vendors score big

By Craig Stedman

■ The first three months of 1995 were a mixed bag for computer vendors. But there was more good in the bag than bad, as IBM and several other companies managed to exceed Wall Street's expectations for the quarter.

"It's a very good time to be a technology vendor," said Gary Helmig, a securities analyst at Soundview Financial Group in Stamford, Conn. "The economy isn't all that favorable, but [customers] are using technology as a competitive weapon and as a way of trimming their own costs."

Other companies that can look back fondly on the quarter include Digital Equipment Corp., Sun Microsystems, Inc., Microsoft Corp. and Intel Corp.

While Compaq Computer Corp. and Tandem Computers, Inc. will recall both pleasure and pain, a downbeat Data General Corp. may prefer to forget the quarter.

IBM made like a rogue elephant on analysts' profit projections. The most optimistic Wall Street jungle dwellers expected the computer giant to report a profit of about $900 million; instead, it earned just under $1.3 billion, a first-quarter record. Revenue shot up by 18% over the same period last year.

IBM's mainframe revenue appears to have increased by 25% in the first quarter of 1994; with prices dropping fast, that would mean shipments of System/390 MIPS rose a remarkable 70%, Helmig said. IBM executives have indicated that their water-cooled mainframes are already booked into early 1996, he added.

Even the unprofitable IBM PC Co. showed "a decent level of progress," although it still merits only a C grade at best, according to Jerome York, IBM's chief financial officer. The PC Co. shipped more than 1 million units in the quarter, but it is still expected to take until 1996 to get the PC unit operating at Compaq-like profit margins.

Digital also surprised analysts with a $74 million profit in a quarter that was considered crucial to its long-hoped-for recovery. This gives Digital two straight profitable quarters and positions it for an up year for the first time since 1990, provided its current fourth fiscal quarter goes as expected.

With sales of Alpha-based systems rising, the new TurboLaser superserver expected to be a hit and its PC business unit finally profitable, Digital appears to be mounting a comeback, analysts said. However, revenue rose an anemic 6% in the last quarter.

At DG, once again, revenue did not rise at all. Another loss ensued, leading to another installment in a seemingly endless series of layoffs and general cost cutting. DG said it expects to cut 500 to 600 more workers and drop its workforce to 5,000.

Desktop leader Compaq had a subdued first quarter despite a 30% jump in revenue during the same period last year. Still, its results were in line with internal predictions of a flat quarter. The company attributed the slow period to a major — and wrenching — product transition.

Compaq said it has completed the transition to an all-new desktop product line and will finish phasing out its older models in the second quarter. However, inventories of slightly more than $2.1 billion remain a major worry for the company, according to analysts.

Senior writers Neal Weinberg and Jaikumar Vijayan contributed to this report.

1995 Calendar first-quarter earnings

Company	Revenue January through March	Percent change from 1994	Profit/Loss January through March	Percent change from 1994
AT&T	$18.26B	7%	$1.2B	12%
Compaq Computer Corp	$2.96B	29%	$216M	1.4%
Data General Corp	$283.8M	0.32%	–$11.1M	NM
Digital Equipment Corp	$3.47B	6%	$73.7M	NM
IBM	$15.74B	18%	$1.29B	284%
Intel Corp	$3.56B	34%	$889M	44%
Microsoft Corp	$1.59B	28%	$396M	55%
Sun Microsystems, Inc	$1.5B	26%	$107.5M	87%
Tandem Computers, Inc.	$515.9M	7%	$21.7M	–16%

NM = Not meaningful

News Shorts

Intuit ruling imminent

A decision by the U.S. Department of Justice on Microsoft Corp.'s proposed acquisition of Intuit, Inc. is expected in the next few weeks. The two companies reportedly have finished supplying the antitrust agency with subpoenaed documents, which means the agency has 20 days to announce whether it will block the deal completely or impose restrictions. Possible requirements include limits on the integration of Intuit's Quicken finance software with Windows 95 and disclosure of Windows 95 technical specifications to other software and on-line vendors.

EMC clarifies pricing

EMC Corp. in Hopkinton, Mass., clarified pricing for its Symmetrix mainframe disk arrays, saying it will not try to get customers with mirrored configurations to pay a higher per-megabyte price than they did for their existing storage gear. However, the company indicated it will attempt to get a premium price for mirroring from new accounts now that it is marketing a promised RAID-S capability, which was formally introduced last week. RAID-S gives EMC a better offering against IBM's Ramac array and Storage Technology Corp.'s Iceberg device [CW, April 17].

CIOs on-line

Now chief information officers have their own on-line help desk. **Entex Information Services**, a computer reseller in Rye Brook, N.Y., last week announced its CIO Help Desk Home Page on the Internet. The site offers free information on a variety of topics relating to management, technology and business issues, Entex said. The offerings include white papers on management issues such as Windows 95 rollouts, help desk re-engineering and internet links to technical information databases and Securities and Exchange Commission data.

Database deliveries on tap

Several database companies plan to announce products at next week's DB/Expo '95 show in San Francisco. **Informix Software, Inc.** is expected to reveal plans for a workgroup-level version of its OnLine database designed to support 50 or fewer users. **Oracle Corp.** is expected to announce plans to resell a data extraction tool from **Evolutionary Technologies, Inc.** for data warehouse users. And **IBM** will roll out major upgrades to its DB2/2 and DB2/6000 databases, cousins to mainframe DB2.

Dick Tracy, can you see me?

A development agreement among **AT&T Corp., Intel Corp.** and **Lotus Development Corp.** is aiming to make video phone calls over PCs a reality. The vendors will integrate AT&T's WordWorx with Intel's ProShare desktop videoconferencing software and Lotus' Notes. The planned system will let users click on a screen icon to dial the call and switch to voice-only if the receiver is not at a video phone. Delivery is not expected until late 1996.

Prodigy to offer ISDN

Prodigy Services, Inc. said it will be the first on-line service to support Integrated Services Digital Network (ISDN) access when it makes it available to subscribers in four cities at the end of May. Boston, Nashville and San Jose and Woodland Hills, Calif., will gain ISDN service, which offers 64K bit/sec. service vs. 28.8K bit/sec. on the fastest analog setups. Prodigy's faster service will be available in June.

HP to Sun users: Such a deal

Hewlett-Packard Co. plans this week to expand a marketing program that targets users of **Sun Microsystems, Inc.**'s workstations and servers. HP said trade-in credits on its hardware are being increased from 15% to 20% for users trading in Sun machines. Porting tools and services are also planned as part of the TradeUp '95 program, HP said.

Recycling old disks

Don't throw away that useless Version 1.0 of your word processing software. Celebrating Earth Day, **GreenDisk, Inc.** in Woodinville, Wash., is extracting disks from unused shrink-wrapped software, erasing all program information and recycling the other materials. The disks will be reborn as GreenDisks — formatted, labeled and environmentally repackaged disks that cost $4.00 for a pack of 10.

SHORT TAKE East week, a **Peoplesoft, Inc.** official confirmed the company will deliver some of its workflow technology to users in late 1995, a full year later than the Walnut Creek, Calif., firm had originally promised.

find//share//manage

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TI tool extends user, developer power

By Elizabeth Heichler

Users hoping to gain the best of both application development worlds — central information systems control as well as end-user power — are testing a new Texas Instruments, Inc. product that lets line-of-business users and developers quickly build applications on the Microsoft Corp.-dominated desktop.

With the announcement today of its Arranger product, which complies with Microsoft's OLE technology, TI is extending its Composer by IEF client/server tools to play in harmony with the Microsoft-orchestrated move toward component-based development.

Component-based development is a new technique that allows developers to assemble applications from pre-existing software building blocks. These components — some created internally and some purchased off the shelf — can be snapped together as long as they comply with a standard interface.

The Plano, Texas-based vendor aims to begin shipping Arranger in August, a spokesman said, but it has not yet disclosed pricing of the packaged configurations and site licensing options.

TI is one of very few companies offering client/server application development tools that can support large-scale computing, said Sandra Taylor, a market analyst at Standish Group International, Inc. in Dennis, Mass.

"Arranger really plays to my understanding of corporate America, where you've got large central IS where Composer fits well, but meanwhile people at the departmental level want to develop applications too, and you can't stop them," Taylor said.

CINergy's Mike Brown *expects better data protection with TI's Arranger*

Corporate IS developers can use Composer to create components and maintain control over the business-critical server side of applications. Then, they can use Arranger to publish an electronic catalog of available components. Finally, departmental application developers or power users will be able to browse this catalog and select components to create client-side applications using front-end tools such as PowerBuilder from Sybase, Inc. subsidiary Powersoft or Visual Basic or the Excel spreadsheet from Microsoft.

Win/win situation

"What this means to us is that we are able to protect corporate business rules and protect the integrity of data throughout the corporation while enabling developers and end users to write front ends as they will," said Mike Brown, manager of data resource management at CINergy, Inc. in Plainfield, Ind. The electricity and gas utility, which serves two-thirds of Indiana, Cincinnati and part of Kentucky, is participating in the early user testing of Arranger.

The next step in testing Arranger, as the product moves into beta release next month, will be to bring in power users to find out if the tools are really easy enough to use, he added.

"The benefit of Arranger should be to help us develop applications faster and make them fully integrated with the desktop," said Bryan McElderry, manager of integrated applications technologies at Chevron Corp. in San Ramon, Calif. Chevron is interested in moving toward component-based development because the ability to reuse components in different applications offers the potential to save time, McElderry said.

In addition, Chevron realizes that component-based development is a key Microsoft strategy and because the company has standardized on Microsoft's suite of desktop applications, "we're pretty well married to Microsoft," he said.

Server/Client

Server/Client: The pro[illegible] dynamic [illegible] architecture that balances [illegible] client/server graphical screen generators with the *richness* of the power and resources of server environments. USoft is the company which has harnessed the technology of Server/Client architecture to deliver the only adaptable solution for planning, building and managing distributed enterprise-wide business applications.

*USoft's Server/Client model is already changing the computing industry with production applications deployed in over 250 corporations, each supporting up to several thousand users.

Server/Client development is based on a ***server-centric dynamic repository*** which captures information models, business rules and business process information, which are vital for effective information systems. These business definitions are then used to automatically generate enterprise-wide business solutions. The close synergy between your business definitions and your applications enables ultra rapid application development coupled with a very high level of adaptability. This ensures that both the server and client partitions are synchronized to reflect your rapidly changing business requirements.

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USoft Server/Client: Complete software tool set to plan, build and manage your distributed enterprise-wide applications including support for ***batch processing, benchmarking, integration*** with popular modelling tools, access by third-party ODBC tools with guaranteed ***data integrity*** and ***authorization protection.***

[illegible]mon and polymorphism without a proprietary language or a "compilation/interpretation" step in the application generation phase.

Transparency: Unheralded *"freedom of choice"* for immediate deployment of your applications to all popular server and client platforms, leading RDBMS and GUI environments without the need for recompilation or regeneration.

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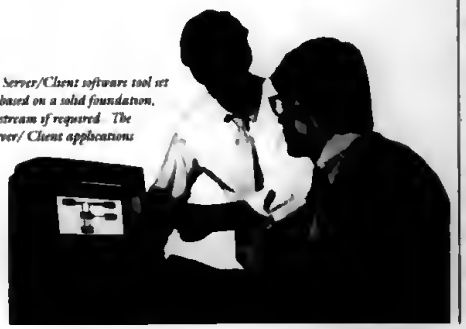
"USoft Server/Client software tool set is the first solution to deliver adaptable applications which are completely driven by the business, providing the ability to immediately respond to business changes."

Mike Overgage
Head of IT
Lloyds Bank Securities Services

"The server-centric approach of USoft Server/Client software tool set ensures that our application design is based on a solid foundation, which enables us to shift gears in mid-stream if required. The performance of the deployed USoft Server/Client applications has exceeded our expectations."

Joe Lilly
Information Systems Support
Department of General Services
of the Commonwealth of Virginia



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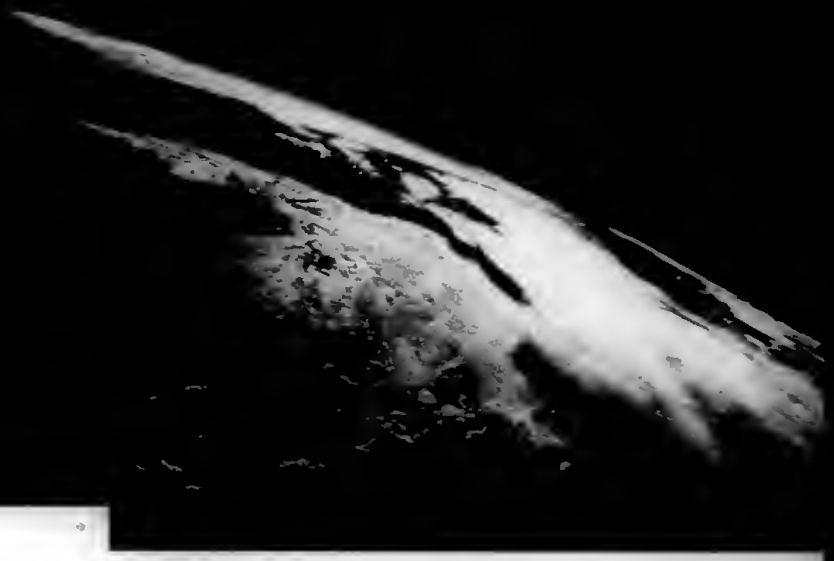

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Database rivalry extends user dollars, influence

By Kim S. Nash

American Cyanamid Co. expects to save $500,000 during the next few years, thanks to database price erosion and a smartly renegotiated contract with Oracle Corp.

"Oracle wanted to stay in al Cyanamid and didn't want Sybase in there," explained William Zeitz, former chief information officer at the Wayne, N.J.-based firm.

Tough competition has forced database makers to bend more readily to user demands during negotiations, but it has also created a dollar that buys more database than it used to, said Zeitz, who is now president of Zeitz and Associates, a New York consulting firm that advises users on software negotiations.

COMPUTERWORLD ANALYSIS: Database pricing

To be sure, the relational database market continues to grow at roughly 30% annually, indicating a healthy interest in the products and, presumably, little distress over the high prices attached to them.

However, database users can get more for their money today than they could at this time last year. For example, after putting aside issues of special features and options, today buyers can generally expect to get a basic 100-user, Unix relational database for roughly $65,000 to $75,000. This is 20% to 30% less than prices 12 to 18 months ago, according to consensus estimates of users and analysts.

"Almost everthing's negotiable, partinularly because vendors like CA and Oracle want nnterprisewide deals," said Frank Cooper, a consultant at international Compuler Negotiations, Inc. in Winlnr Park, Fla.

While they are not exactly commodities, relational databases are fast becoming more alike, according to a recent report by The Buller Group, a research firm in Hull, England. That is, the products approach tasks differenlly hut accomplish, in nffect, many of the same functions, thn report said.

The two largest software firms in the world, Computer Associates international, Inc. and Microsoft Corp., are pushing hard to speed commoditization.

As it does in other markets, Microsoft cootinuously undercuts rivals' pricing. When thn vendor priced its SQL Server database at less than $200 per user last year, Sybase and Oracle responded, although slowly, with what they called workgroup versions of their own databases. Oracle7 Workgroup Server, for example, goes for $199 per user.

Informix Software, Inc. plans to announce next week a scaled-down product of its own.

CA, meanwhile, hopes to flood the market with virtually free copies of Ihe ingres database. Key to that plan is an unprecedenled 12-year reseller contract with Electronic Data Systems Corp. that will let EDS customers get all CA products — includiog databases — for free, said Dana Groover, director of the EDS/CA relationship at EDS in Dallas.

One of a kind

in the unusual deal, EDS has agreed to pay CA an undisclosed sum based on the numher of EDS clients that deploy CA products during the next dozen years, said Alan Paller, director of open systems at CA in Islandia, N.Y.

EDS has no similar deals with any other software makers, Groover said.

This does not mean that the giant integrator will drop Oracle, Syhase or other products it sells, he said. But if users want software other than CA's from EDS, they must pay for it, he said.

Software AG, Business Objects expand query tools

By Rosemary Cafasso

Software AG of North America, Inc and Business Objects, Inc. last week said Ihey intend to jazz up their respective query tools with more end-user functionality.

The companies are part of a growing client/server query tools market segment that sells software designed to enable information systems shops to creatn a query environment and define whal can and cannot he accessed.

Cognos Corp.'s Impromptu is another key offering in this niche. Datahase query tools snch as Microsoft Corp.'s Access are typlcally purchased hy end users who are nol involved with IS.

Changes galore

First up is Software AG in Reston, Va., which plans this week to announce Esperant Release 3.0, which includes several functional improvements.

Beta testers said those improvements help users retrieve data from different sources. And they do more than just read data once it is returned to their desktops. For example, the new version allows users to set up different views of query results to create what-if scenarios.

"They moved options from the old report section to the query results window, so you don't have to move back and forth," said beta tester Bob Wesolek, a project manager in corporate systems at Globe Glass & Mirror Co. in Chicago. "That, for sure, is one of the options that makes life easier."

Esperant, which has been shipping since mid-1994, now has a customer base of aboul 200. The firm claims it hulletproofs qneries with expert system technology that can read queries as they are created and hlock them if they have been put together wrong. It also includes several administrative tools that let IS monitor queries and sel parameters for them.

Esperant 3.0

New features:

- Query results from more than one database source
- Live data formatting, which allows users to sort and rearrange data from within a query results window
- Batch scheduler, which performs long queries during off hours
- Beefed up security; access can be controlled for specific DataView windows

Price: $595 per user

Availability: June 1995

Meanwhile, Business Objects in Cupertino, Calif., Software AG's chief competitor in this market niche, confirmed last week that it will release a major upgrade to its Business Objects tool set in the second half of the year.

Business Objects is installed at about 1,500 customer sites The company went public late last year and reported revenue of $30.2 million for that year.

Voice strain plagues PC users

CONTINUED FROM COVER 1

tends in he new users who think they need to speak louder to make snre the system nnderstands," a spokesman for Dragon Systems said.

Vocal breakdown

For many people with typing injuries, voice input has been a career-saver. But some experts now worry that as the technology moves beyond niche markets and into mainstream Windows PC applications, a larger group of unprepared workers may trade typing injuries for voice injuries.

Users are at "a high risk for a vocal breakdown if their vocal habits are not good to begin with," said Kathryn Beadle, a speech pathologist at the Mid Peninsula Speech and Language Center in Palo Alto, Calif.

By coaching users on the emerging voice-input technology, employers and vendors can prevent a new npidemic of repetitive stress injuries, Beadle said.

Some users have found that they shout at the microphone, when a softer approach is needed. "People tend to punch their words ont and speak more forcefully because they're wondering whether the system will recognize thnir words," said Tom Knotts, who uses a voice-recognition system to design integrated circuits for a high-tech company in Palo Alto, Calif.

"But even speaking softly can lead to injuries if the voice is too tight," Knotts added.

There are no statistics on thn emergenes of computer-related voice injuries. Industry analysts and vendors downplay the issue, insisting that it affects only a tiny fraction of users.

But for those afflicted, the road leads to at least a few sessions with a speech therapist or voice coach to learn correct posture, hreathing and relaxation techniques (see box at left). For example, putting a soft "h" in front of a word that starts with a vowel — such as saying "hexit" for exit — strains the voice less.

Some tips for preventing voice strain

- Sip water frequently
- Sit up straight (or stand)
- Relax the neck, shoulders and jaw
- Speak softly and in a conversational tone
- Take frequent rests

Stress, smoking, a cold, shallow breathing, allergies and sedentary work with bad posture can exacerbate the problem, said John Haskell, a speech pathologist in New York. He added that users should ditch robotic, monotone delivery and speak to the computer in a conversational, animated fashion.

However, it is hard to predict who will have a vocal breakdown.

"Some people just seem lo be born with a cast-iron larynx, and they can get away with murder," that is, had vocal habits, Beadle said.

Users said voice input requires you to think differently aboul your job. "Now I'm doing my work by voice, and that requires a professional approach to taking care of my voice," said Lehman, who uses DragonDictate for Windows.

Remembering to use thn proper relaxation and breathing techniques is hard to do on the job, however.

"The work pressure can really distract you, and all of a sudden you find your voice has tensed np," Lehman said

Anothnr victim of keyboard and voice strain said he did not wanl his name published because "that would only generate a number of inquiries from other people, which would require mn to eithnr type or speak on the phone tn thnm. For obvious reasons, I have to husband my typing and speaking resources these days."

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Quality questioned

CONTINUED FROM COVER 1

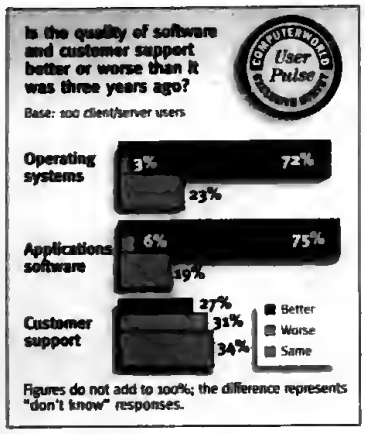
maintenance release that is supposed to fix some bugs.

David Meltzer, group product manager for Macintosh applications at Microsoft, said the maintenance release, Mac Office 4.21, began shipping free to customers last week. "Its primary purpose is to address performance defects that customers felt very strongly about," he said.

Pensak noted that quality problems are hardly the province of any one vendor. "I am quite unhappy with the way prices are falling," he said. "To compete on hardware price, the system vendors cut their margins to the bone and then can't afford to do a really good job on software. It's happening across the industry."

Industry observers last week agreed that many vendors, facing increased pressure to meet competition and reduce costs, have indeed cut back on testing, quality assurance and support. Yet vendors say that with newer testing and debugging tools, the software today is more stable.

Still, as users buy the stuff in droves, doubts linger about its quality.



"Overall, the quality of software has gone downhill," said James Hafen, a programmer/analyst at Megahertz Corp. in Salt Lake City. "When WordPerfect 6 for Windows came out, it was such a resource hog and had so many problems we brought in [Microsoft] Word, and now 70% of the company has converted to Word."

"It shocks me how many bugs are still in Windows," said Robert Chambers, a software developer at Healthsource South Carolina, Inc. in Charleston. "It's amazing how tolerant users have become with an operating system you can count on crashing once or twice a day."

Computerworld's recent survey of IS professionals showed that users say they are demanding greater simplicity in software (see chart, page 1). Moreover, 66% said their internal support costs per user have risen in the past three years. A majority said support from vendors has gotten worse.

Yet these feelings of dissatisfaction are the exception, not the rule. In the survey, three out of four respondents said the quality of application software is actually better than it was three years ago. Almost as many said operating systems software had also improved.

Outsourcing appeal

To pare costs, vendors are increasingly outsourcing customer support. Microsoft has already lined up nearly a half-dozen companies to handle the onslaught of help calls expected when Windows 95 is released later this year — a move the company did not have to make for Windows 3.1.

Support has grown much more difficult as the number of applications, software versions and customers has exploded, said Dave LeFevre, director of product marketing for WordPerfect's PerfectOffice suite. "It was one thing to support 1 million WordPerfect users six or seven years ago. It's another thing to support 18 million today."

Support calls outsourced to third-party support providers more than doubled from 553,000 calls in 1993 to more than 1.2 million calls in 1994, according to Dataquest, Inc., a market research firm in San Jose, Calif.

"You have to wonder what impact this will have on customers," said Bill Jones, senior director of the desktop products group at Lotus Development Corp. "They just don't have the same level of training and product data that internal support people have."

In the past year, Lotus, Microsoft and Novell, Inc. have all moved to outsource customer support.

Hafen said that Megahertz, seeing its free support from WordPerfect deteriorate, moved to a premium service plan costing $3,000 a year. "Initially we got shorter [telephone] hold times and technicians who knew what they were talking about," he said. "But recently the hold times and technicians have been getting worse again."

Ironically, WordPerfect is widely reputed as having the best customer support in the business.

Some vendors questioned the survey findings, which noted that nearly two-thirds of users were willing to pay more for software that was more stable. "That does surprise me," LeFevre said. "Users want more for less and are pretty much expecting the $99 word processor from us."

Real world beta

It is impossible for vendors to test software on every possible user configuration, said Scott Winkler, vice president of operating systems research at Gartner Group, Inc. in Stamford, Conn. "No matter how hard a vendor tries to simulate everything that can occur, the only way to really find out is in the real world, sometimes long after the beta test."

But not all users buy that argument. "I'm getting very upset with vendors that say, 'OK, let's do a beta,'" Pensak said. "What that means is, 'We're going to let our customers find the bugs; then we'll fix them.'"

"Operating systems are reaching a level of complexity almost impossible to manage," said Rob Enderle, a senior industry analyst at Dataquest. "Right now, the most complex products are ahead of the development tools' ability to support them."

Gary Northup, an assistant vice president at Sterling Production Credit Association in Sterling, Colo., is one user who has not seen a decline in product quality or customer support. One reason, he said, is that Sterling is extremely cautious in moving to new releases.

"For example, we won't move to Novell 4 until they get the bugs out," Northup said. "Besides, Novell 3 is currently meeting our needs."

When less is more

That gold-plated widget may look neat in the software advertisement, but many users say they would gladly settle for fewer fancy features in exchange for greater reliability and performance.

"Basic products such as spreadsheets have gotten to a level of sophistication that they meet our needs, and it's more important to have a solid product than more functionality," said Daniel Scott, head of the Computer Sciences Division at the University of Texas in Austin.

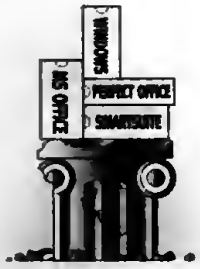
"All I need is a word processor that puts words on a sheet of paper; I don't need to embed tables and graphics," said James Hafen, a programmer/analyst at Megahertz. "I'd trade back down for a basic solid package that runs fast."

However, Hafen said some users at his company, such as technical writers, do need those advanced features.

Despite the growing cries for simplicity, some users are still looking for more capable software.

"Operating systems still lack important features," Scott said. "Security, especially, is sorely missing in literally all the operating systems we have today. I think we have to pay whatever is necessary to get those features."

—Gary H. Anthes



Suite and sour

The advent of application suites such as Microsoft's Office has changed software development in a number of ways, vendors said.

With suites, four to eight applications must be tested and delivered at the same time, and that is an enormous drain on company resources, said Bill Jones, director of product development at Lotus.

Suites have also placed considerable pressure on vendors' revenue (see story, page 2). Vendors are selling several applications at essentially the same price they charged for one application just a few years ago. So software companies must have a high sales volume to make up for the lower return per unit.

For example, Lotus plans to sell its SmartSuite and a Notes client in a bundle for $299. Just a few months ago, Notes alone sold for $250. *—William Brandel*

Speaking out

Desktop users fed up with buggy software and poor support can borrow a concept from the data center: Don't be the first to install the latest release.

"In the old mainframe world, a lot of companies didn't buy new software releases for several years after they became available, waiting for someone else to work the bugs out," said Rob Enderle, a senior analyst at Dataquest.

David Pensak, principal consultant for advanced computing technology at Du Pont, made a recommendation. "We have to say, 'I'm mad as hell, and I won't take it anymore,'" he said. "Users need to get organized. We need an Organization of Outraged Users."

Six out of 10 surveyed by *Computerworld* said they would join and participate in a user organization devoted to getting vendors to improve product quality and customer support.

"We need to hold these [vendors'] feet to the fire and let them know we aren't going to pay $300 to $400 for an application that doesn't work," said Robert Chambers at Healthsource South Carolina. *—Gary H. Anthes*

Users aplenty, fewer new products on tap

By Michael Fitzgerald

Spring Comdex, typically a lively show with at least one significant announcement, is looking pretty sedate this year. The culprit, observers say, is the forthcoming Windows 95.

While the show is expected to be well attended, few significant product announcements are expected. Those that are anticipated include **Lotus Development Corp.**'s WordPro, its new word processor (see story, Cover1), and **Microsoft Corp.**'s Microsoft Plus, a utility for Windows 95 (see story, page 6).

At the related Windows World Open exhibition, an annual event, Microsoft will demonstrate Office for Windows 95 and each application in the suite, as well as Schedule+, a new group calendaring product.

Also at Windows World is the annual Open, which showcases the best corporate applications developed on the Windows platform. Nearly 100 corporations have entered in one of nine business categories.

The three finalists in each category will demonstrate their applications at the Windows World Open pavilion, and Microsoft Chairman Bill Gates will present each winner with a trophy.

Other software announcements will include the following:

- **Borland International, Inc.** will demonstrate Voyager, the next generation of dBase. Borland claims Voyager will be the only second-generation object-oriented Xbase product on the market that uses visual tools and easy-to-use languages.
- **Sheridan Software Systems, Inc.** in Melville, N.Y., plans to unveil a set of off-the-shelf, ready-to-use software components that developers can plug directly into applications by using tools such as Microsoft's Visual Basic.

Comdex/Spring has become more a software show than a hardware show, but with Windows 95 delayed, the hardware makers will fill the void with a number of new products.

For example, **Hewlett-Packard Co.** will introduce its HP NetServer LH Series of Peripheral Component Interconnect (PCI) servers based on 75-MHz and 90-MHz Pentium processors. NetServer Navigator, a bootable CD-ROM that eases configuration, installation and management of the servers, will come standard with the systems, according to HP. Prices start at $4,679.

Dell Computer Corp., meanwhile, will show off its 60/120-MHz Pentium-based Dell Dimension XPS and OptiPlex systems, which shipped last week.

The systems, featuring Intel's fastest processor, come with 256K-byte Static RAM cache, 16M bytes of memory, a 1G-byte hard drive, 64-bit PCI local bus video and a quad-speed CD-ROM drive. Prices start at $2,999.

Also on tap are the following:

- Remote access software makers **Traveling Software, Inc.** in Bothell, Wash., and **Triton Technologies, Inc.** in Iselin, N.J., will discuss their Windows 95 strategies.
- **America On-Line** in Vienna Va., will feature "The Internet Experience" in its booth. America On-Line will offer classes that teach attendees at the show how to build a home page on the World-Wide Web.
- **Simple Technology, Inc.** in Santa Ana, Calif., will release the 28.8 Communicator, a PC-Card data/fax modem that combines landline and cellular voice, data and fax capabilities. The V.34 class modem runs at 28.8K bit/sec and will retail for $275.

Computerworld *staff Jaikumar Vijayan, William Brandel, Stuart J. Johnston and Elizabeth Heichler contributed to this report.*

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Alan F. Hall

Show to highlight Win 95 platform, power needs

By Jaikumar Vijayan

Users wondering what it will really take to run Windows 95 and the next-generation applications built around it can glean some clues from Windows-ready hardware on display this week at Comdex/Spring'95 in Atlanta.

Spurred by the upcoming arrival of Microsoft Corp.'s much-hyped operating system, PC vendors will demonstrate systems featuring substantially more functionality and horsepower than what is now available on most corporate desktops, according to industry observers.

The new generation of high-end 486- and Intel Corp. Pentium-based systems, most of which have been tailored to Microsoft's list of hardware specifications for the operating system, feature substantially greater memory and disk space, increased device flexibility, improvements in power management, communications capabilities, external connectivity and multimedia features.

If the new wave of systems are any indication of the hardware requirements needed to optimally run Windows 95 and its supporting applications, then users still mired in old 386- and even some recent 486-based technologies face expensive upgrades.

Stars of the show

Users can learn more at Comdex, where the spotlight will be on the following:

- Pentium- and high-end 486-based Windows-ready systems, which pack 16M bytes of standard RAM and upward of 420M bytes of hard disk storage. This compares with 8M bytes of standard RAM and 340M bytes of hard disk space available less than six months ago.
- Peripheral Component Interconnect (PCI) technology, local bus architectures, new high-performance serial bus technologies for external connectivity and new 32-bit drivers that increase the Plug and Play capabilities of the systems.
- Multimedia and communications functions such as onboard software-based 16-bit wavetable sound synthesis, 64-bit graphics capabilities, infrared communications and Integrated Services Digital Network modem technologies by next year.

"Microsoft is making sure that the receptacles for [Windows 95] will show it off nicely," said Margo Wald, an analyst at BIS Strategic Decisions in Norwell, Mass.

By itself, most of the technology on display — such as PCI, Plug and Play and some of the graphics capabilities — is not particularly new and has been shipping for some time. Comdex, however, is expected to highlight the recent trend toward more widespread integration of these capabilities in standard PC hardware.

A possible schism

As this trend gathers momentum, however, it could open a significant gap between what is available today and the existing hardware, analysts said.

For instance, a recent survey of 130,000 corporate users conducted by market research firm Computer Intelligence InfoCorp in La Jolla, Calif., revealed that most corporations do not have the basic hardware to handle Windows 95.

An estimated 33% of all corporate desktops are still based on 286 and 386 architectures, which are not optimal for Windows 95, according to CI InfoCorp. A full 69% have 4M bytes of RAM or less. Most industry observers agree that at least 12M to 16M bytes of RAM will be required for Windows 95 [CW, March 27].

"All of our 286- and some of our 386-based systems will have to go" as we migrate to Windows 95, said Leslie Peckham, a technology development analyst at the Principal Financial Group in Des Moines, Iowa.

Principal Financial, a beta site for Windows 95, has approximately 9,000 PCs — at least half of them are 286- and 386-based systems that have proved unsuitable for Windows 95, according to Peckham.

Pentium turnaround

Pentium sales continue to boom for Intel. The company last week announced another record fiscal quarter (see story, page 8), as billings for its high-end Pentium chip outstripped those of the older 1486 chip for the first time.

Most Pentium-based systems are still going to the home and small-business markets, but analysts said the corporate market is starting to migrate to the new chip. "It's starting to turn around. There are still a lot of [486-based systems] out there, but there is a lot of interest in Pentium. We are starting to see companies move toward Pentium," said Linley Gwennap, editor of the "Microprocessor Report" in Sebastopol, Calif.

The strong demand for the processor is causing some observers to upgrade their Pentium shipment projections for the year. While Intel originally said it expected to ship about 20 million Pentium chips in 1995, the actual figure could be closer to 25 million, Gwennap said.

Though some speculate that increased interest in Pentium is tied to the imminent arrival of Windows 95, analysts said it is too early to say if this is true, especially because Microsoft Chairman Bill Gates last week hinted at the Corporate Association of Microcomputer Professionals user group meeting in Chicago that delivery of the long-awaited operating system might slip past August. While repeatedly stating that August was the target ship date, Gates said on different occasions last week that the product could ship as late as late fall.

—Jaikumar Vijayan

Microsoft

CONTINUED FROM COVER 1

other improvements.

Those improvements will appear in three upcoming SMS releases: one minor release this summer, a major one late this year or early next year and another major one at a still later date, said Phil Holden, SMS product manager at the Redmond, Wash., company.

"The release in the June or July time frame is basically a minor upgrade to allow customers to support new environments" based on Windows NT 3.51, Windows 95 and SQL Server 6, Holden explained. PowerPC support will be added later this year, he said.

The major release will provide "a lot more increased functionality," Holden said. For example, Microsoft will augment SMS' minimal software license metering support initially through tighter integration with third-party products. Later, he noted, "We may also offer that ourselves."

Microsoft is also looking at allowing Windows NT events to be translated into Simple Network Management Protocol alerts in that release, he added.

Needs improvement

But one user pointed to a gap in SMS that Holden said Microsoft will need to look into further.

"A primary area of improvement is the ability to more easily get reporting back on the success of installation jobs on PCs," said Larry Shaw, PC coordinator for client/server support at Nordstrom, Inc. in Seattle. Currently, he noted, SMS informs the administrator that a job ran but does not indicate whether it has succeeded or failed.

The third forthcoming release of SMS will likely implement the Messaging Application Programming Interface (MAPI) standard to support the distribution of smaller software updates throughout enterprisewide LANs via electronic mail messages, Holden said.

Analysts praised the promised functionality but cautioned that SMS still will work best in Windows-centric environments.

"If you're migrating to NT or Windows 95 and you want to make Windows your corporate standard, SMS is about your best choice as a management foundation," said Jill Huntington-Lee, principal consultant at Brandywine Network Associates in Cinnaminson, N.J.

However, she added, SMS requires much more work on the part of systems administrators, who must use it to manage large numbers of non-Microsoft-based or older Microsoft-based PCs.

One user attested to that. "SMS is not forgiving of older hardware," said Adam Lynn, a LAN engineer at Micro Research Industries, Inc. in Alexandria, Va. "If you don't have a megabyte of free disk space [on an older PC], SMS can lock up the machine. And if the machine is low on memory, Windows can crash. We worked around that by going to individual machines and installing [SMS] manually."

But when used with newer PCs, Lynn said, "SMS is the ultimate management utility. I can sit at this crummy little desk and manage this entire building."

Holden said users do not need to install all SMS-related agent software on every PC, and the SMS release later this year will allow users to run agent programs on servers rather than on client machines. But while the latter capability would conserve desktop disk and memory resources, "I wouldn't want to place an unanticipated load on my servers," said Dina Madson, lead operating systems analyst at King County Medical Blue Shield in Seattle.

Holden also said that in conjunction with the new release this summer and a new software developer's kit now being beta tested, Microsoft will document how users can put SMS event messages into a standard Desktop Management Interface format.

Hermes' heaven

Users should see promised improvements for Microsoft's Systems Management Server beginning this summer

User requirement	Solution	Availability
Support for new operating environments	Support for Window NT 3.51, Windows 95 and SQL Server 6	Summer 1995
Better support for legacy PCs	Migrate agents from clients to server	Q4 1995 or Q1 1996
Software license metering/management	New features from independent software vendors and Microsoft	Q4 1995 or Q1 1996

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Delphi Facts

Native code compiler for high-performance applications	✔	–	–
Creates standalone, redistributable .EXEs and DLLs	✔	–	–
No runtime interpreter DLL required	✔	–	–
Fully object-oriented programming language. Provides optimal code reuse	✔	–	–
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'Lite' Oracle programs suit small users' diet

By Kim S. Nash

Oracle Corp. is racing SAP AG and other client/server rivals to market with "lite" versions of financial and manufacturing applications. These slimmer applications are designed to run on Microsoft Corp.'s Windows 95 and Windows NT as well as other non-Uoix server platforms, Oracle officials confirmed last week.

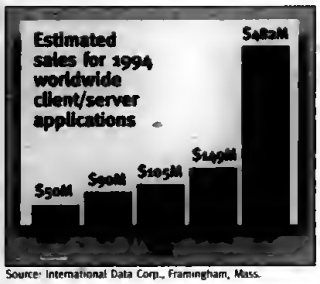
The vendor has also started to overhaul its applications divisioo in an effort to better service customers, said Ray Lane, president of worldwide operations at the Redwood Shores, Calif., company.

The as-yet-uonamed scaled-down packages will include several preset features, such as accounts receivahle procedures, to speed installation, Lane said. Oracle is shooting for a 90- to 120-day installation process for the products, which are expected to ship late this year, he added.

But the same traits that should speed installation of the products will also limit flexibility, so the "lite" products would probably appeal more to smaller companies, according to Mark Farnham, a consultant at Rightsizing, Inc. in Lebanon, N.H.

"It's easier for small shops to change their business practices to match the software than it is for larger companies," he said.

Similarly slimmed-down clieot/server packages are under way at SAP and Platinum Software Corp., among others, and are doe out this year.



Source: International Data Corp., Framingham, Mass.

Unlike those products, Oracle's low-end applications will not support non-Oracle databases, Lane said. The software will run only on Oracle Workgroup Server, a preconfigured edition of Oracle7 that is intended for small groups of 25 to 50 users.

Meanwhile, Oracle plans to make 25 to 30 changes to all areas of its applications group — technical support, customer relations and sales.

The revamp is a result of a three-mooth study finished last month to find out "where the problems are," Lane said, adding that SAP "has hasically blown our doors off" [CW, Feb. 6].

Staying competitive

Oracle plans to create sales and technical support groups dedicated specifically to applications by June 1, the start of its 1996 fiscal year. Curreotly, Oracle is losing applications customers to rivals because its salespeople are more eager to sell databases, Lane said.

He declined to specify pricing on the slimmer applications but confirmed that they will be part of an Oracle-wide, per-user price structure scheduled to be implemented June 1 [CW, March 20].

A lower price point for the low-end applications will attract users who otherwise might have gone to competitors, said Richard Cross, president of the Rocky Mountain Oracle Applications User Group in Denver.

License fees for full-blown Oracle applications run from $400,000 to several million dollars, plus the cost of the Oracle database, according to Dean Arnold, vice president of applications marketing at Oracle.

Alpha lures database makers to port. See page 8a.

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McCaw moves boost wireless

By Michael Fitzgerald

Enough pieces of the wireless puzzle are coming together that parts of the picture can be made out.

Cellular leader McCaw Cellular Communications, Inc. gave the slow-moving Cellular Digital Packet Data (CDPD) protocol a boost last week when it finally began to offer commercial service a year after its first competitor. When complete, CDPD will span the same area as the circuit-switched cellular network, which carries cellular voice calls and the majority of wireless data transmissions.

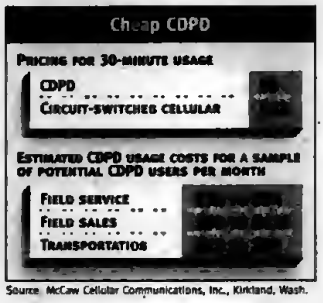
McCaw also announced a partnership with remote access player Attachmate Corp., which updated several of its key products with CDPD capability.

"McCaw is defining the way you play the wireless market," said Iain Gillot, an analyst at Link Resources Corp. in Framingham, Mass. He said the McCaw/Attachmate marriage was a natural combination of a network and an application vendor.

"Without people like Attachmate, McCaw can't sell kilobytes of data, and that's what they're meant to do," Gillot said. In fact, the announcement has weight because Attachmate has products that will run over CDPD, such as Zip SNA, Extra Personal Client and its OpenMind groupware product.

A fourth product, the NetWizard software distribution tool, will also run over CDPD. It will be released late in the third quarter or early fourth quarter. By year's end, there may even be the better part of a network for users to run applications over.

McCaw officials promise that 75% of their voice coverage area will have CDPD service by year's end. While interoperability among different carriers has so far been lacking, the wireless industry is expected to resolve this issue, though perhaps not until next year.



Source: McCaw Cellular Communications, Inc., Kirkland, Wash.

But for some users, coverage can be limited to a regional basis. "Nationwide coverage is not an issue for us," said Bruce Kimball, manager of mobile and emerging technologies at American Airlines. Because American has to integrate its Sabre reservations database with wireless capabilities, McCaw's slow pace in deploying CDPD "allows us to roll out to customers on a schedule that's realistic and lets us keep our sanity," he said.

McCaw also announced pricing for its CDPD service. Its best rate is 8 cents per kilobyte for users who transmit more than 500K bytes a month. While this is half what users might spend to send data via circuit-switched cellular networks, users said it is still too costly.

"We're nowhere with wireless right now," said Sam Nash, technical support and telecommunications manager at Associated Grocers, Inc. in Seattle. He said his company "could have one user use 500K bytes in two days. The kinds of things we need to transmit are typically fairly good size."

Nash said he likes the CDPD pricing, but he has concerns about speed. "For the kinds of things we would initially use it for, I think our field staff would turn the thing off before it's done," he said.

Jeff Damir, director of product marketing and management at McCaw's wireless data division, said, "there are still some things that need to be done to make us more efficient." But he emphasized that if McCaw wasn't working with companies such as Attachmate, "we'd have a lot more work to do."

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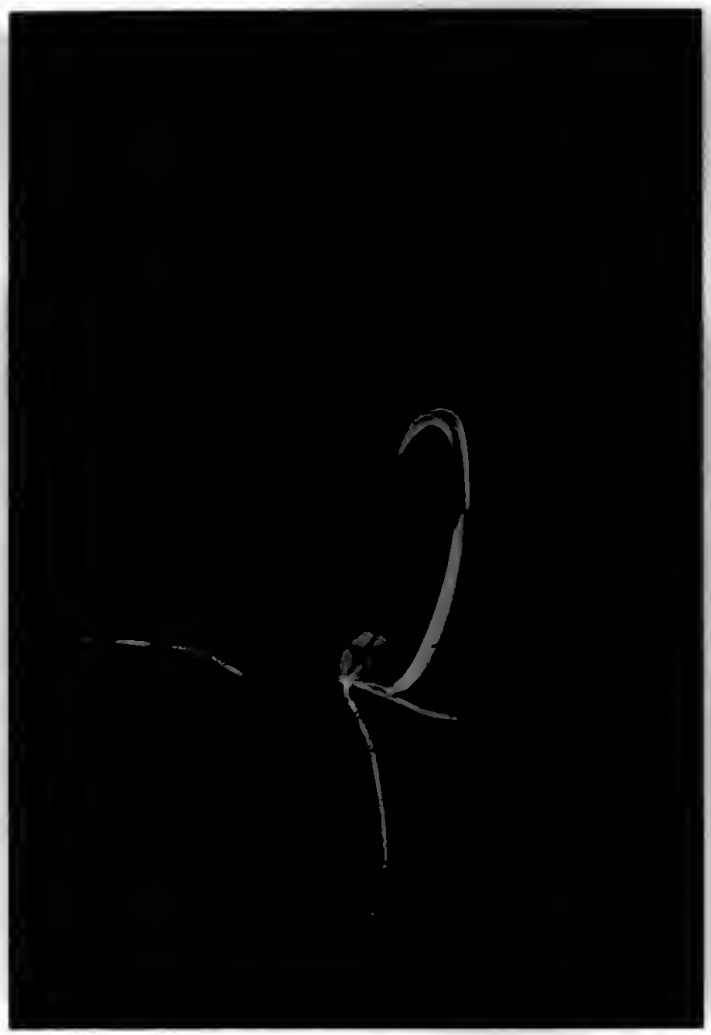

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Network uptime

Swissair bullet-proofs new network

Reservations and ticketing activities more secure

By Thomas Hoffman

Until recently, Swissair's 60 North American offices were experiencing disturbing turbulence that had nothing to do with bad weather. About once a week — for up to three hours at a time — its LANs fell victim to crippling "broadcast storms."

These storms occur when faulty hardware or misconfigured software floods a network with data packets, rapidly depleting bandwidth and processing resources. The effect on business can be detrimental.

"Lost calls and unavailable systems equals loss of revenue," said Thomas R. Wirth, director of communications and information systems at Swissair's North America division.

Covering all bases

In January, the Zurich-based airline consolidated its two New York-area offices into a new North American headquarters in Melville, N.Y. The carrier took advantage of the move and installed a fail-safe network to support its reservations and ticketing activities.

"With this technology, we have increased availability, no network downtime, and we didn't have to add any more [IS] staffers," Wirth said, explaining that intelligent workstations can now be used to manage the network.

The setup includes 80 IBM PS/2 workstations, five IBM 8260 hubs and a Northern Telecom, Inc. Meridian private branch exchange. The $1 million, port-switching hub-based architecture is expected to help the airline increase its 24-hour network availability from 98.8% to 99.8%.

Although a 1% difference in uptime may seem minimal, it can add up to dozens of extra hours of availability in the course of a year, all of which translates into revenue opportunities.

Because Swissair's North American data center at John F. Kennedy International Airport relied on semi-intelligent hubs, a technician regularly had to go into the airline's "spaghetti-wired" wiring closet to troubleshoot cabling glitches whenever a LAN went down, Wirth said.

Along with the more reliable network infrastructure, the airline's upgrade to OS/2 workstations has improved staff productivity by an estimated 5% in the first three months of use, said Vinny Gaines, Eastern regional reservations manager at Swissair in Melville.

"Now that we're using an OS/2 platform, we can toggle from document to document," Gaines said. At the JFK facility, Swissair's 81 reservations staffers often had to quit out of files before entering another application, he said.

"With the new LAN technology and intelligent wiring hubs, we estimate that we will have a total of 20 hours annual downtime" due primarily to network maintenance, Wirth said.

Before Swissair moved 170 staffers into its Melville headquarters, a fiber-optic communications backbone supported by the 8260 hubs was installed to handle network glitches. The facility is connected via undersea cable to six IBM mainframe-compatible machines at the airline's Zurich data center.

The Melville office relies on IBM's NetView for AIX network management software to manage all of its local and remote LAN segments, Wirth said.

Good catch

Swissair's North American offices field approximately 90,000 customer calls each month. Thanks to the recent installation of a Unix-based calling system, 20,000 of those calls are handled automatically.

The data center consolidation is expected to result in significant cost savings, although Wirth declined to specify the amount. The European carrier has long taken an aggressive approach to expense reductions, according to industry analysts.

"Swissair has one of the strongest balance sheets among European airlines," said Marcus Hansen, an analyst at ABN Amro Hoare Govett in London.

Novell's messaging strategy remains elusive

By Suruchi Mohan

Much to developers' dismay, Novell, Inc. has never been able to clearly articulate its messaging strategy, and the purchase of WordPerfect Corp. last year only escalated those concerns.

While anxious Message Handling Service (MHS) users and developers say they are now starting to see a glimmer of a strategy, many remain confused about Novell's intentions. MHS is an application-independent messaging transport in the NetWare environment. It is supported by many popular electronic-mail applications such as Da Vinci Systems Corp.'s Da Vinci Email, Banyan Systems, Inc.'s BeyondMail and On Technology Corp.'s Notework.

At the recent Networld/Interop '95 show in Las Vegas, a contrite Novell beat itself up in front of its MHS developers. "We've been saying [that we'll integrate MHS and GroupWise] for a year, but we haven't done anything," admitted Dave Clare, Novell's product line manager of core services.

Still unanswered, for example, are questions about how developers will support simple message format (SMF) 70 and SMF 71 — the application programming interfaces (API) for MHS — in the Collaborative Messaging Server (CMS) architecture. CMS is Novell's answer to Microsoft Corp.'s Exchange server, which is a rival platform for collaborative computing.

Novell's continued support of SMF 70 is good news for MHS gateway developers, who have based all their products on this API rather than the newer SMF 71. This is a departure from its earlier position of supporting only SMF 71.

John Rizzi, vice president of strategic marketing at On Technology in Cambridge, Mass., who has been a vocal critic of Novell's reluctance to spell out a clear messaging strategy, is now happier with Novell's approach. He said the messaging services in NetWare 4.1 are MHS services, but the integration of these services with NetWare Directory Services (NDS) is still evolving.

However, users also have concerns about Novell's support of MHS.

Jim Braun, project coordinator at Kansas State University in Manhattan, said he would like Novell to solve some of the problems he is having with Global MHS, the NetWare Loadable Module for NetWare 3.x. Global MHS does not work in a pure NetWare 4.1 environment, which means users do not have direct access to Simple Mail Transfer Protocol and X.400 networks and cannot use Remote MHS without going through a NetWare 3.x server.

> "We've been saying [that we'll integrate MHS and GroupWise] for a year, but we haven't done anything."
>
> —Dave Clare, Novell product line manager

Incompatibilities linger

A directory service is built into Global MHS, which is incompatible with NetWare 4.1's NDS, said Bob Harbison, network consultant at Network Integration Consultants in Sausalito, Calif. This is a big problem in NetWare 4.1 environments because administrators can use Global MHS only in bindery emulation. "It is not aware of NDS," he said.

Novell hopes to solve that problem with its Global Access Module, currently in beta testing, which will link Global MHS to a NetWare 4.1 server.

Novell is also trying to get the MHS community involved as it rethinks its integration strategy for MHS and GroupWise. At a developers' meeting scheduled for next month at Novell's Orem, Utah, headquarters, the company hopes to receive feedback on its convergence design and analysis. "This should remove concerns about Novell's intentions," Clare said.

This forthrightness seemed to reassure some developers. "Novell is showing commitment to MHS," Rizzi said. Although the MHS APIs will borrow a lot from GroupWise, SMF 70 and SMF 71 will stay around long enough so that developers will have time to migrate, he added.

Worries remain

But beneath the smiles are some concerns. Migration to GroupWise will be "a tough sell for MHS vendors because we don't want to hand over our user base to GroupWise," said Brett Warthen, chief executive officer of Infinite Technologies, Inc. in Owing Mills, Md. Infinite provides routers for the DOS-based MHS market. Warthen also added that a benefit of MHS has been its independence from any front-end application. GroupWise changes that because it is now Novell's preferred messaging application.

For developers, "there is always the nagging thought that Novell will have its own application" in GroupWise, said Lih-Tab Wong, president of Computer Mail Services, Inc. in Southfield, Mich., referring to Novell's acquisition of WordPerfect, which essentially made GroupWise the preferred Novell application.

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network as a single entity, instead of a collection of separate servers. So jobs that used to take hours can be accomplished in minutes. Plus, tasks like setting up users, granting security privileges and access to resources—tasks that were very time consuming with NetWare 3— aren't with NetWare 4.1. Click a few icons, then type information in a dialog box. You've just added another user to the entire network. It's quick and easy. Again—saving you time and money.

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7 Key Services	NetWare 4.1	NetWare 3
1 DIRECTORY Global directory service	YES	NO
2 INTEGRATED MESSAGING	YES	NO
3 MULTIPROTOCOL ROUTING	YES	Add-on product
4 NETWORK MANAGEMENT Graphical user tools provide view of entire network	YES	NO
5 NETWORK SECURITY		
RSA public/private key	YES	NO
Restrict login to specific Mac address	YES	NO
Security auditing	YES	NO
6 FILE SYSTEM AND STORAGE Support for data-migration hardware, data compression and disk block suballocation	YES	NO
7 NETWORK PRINTING	256 per print server	16 per print server
Additional Services		
• INTEGRATED SYSTEM FAULT TOLERANCE LEVEL III	YES*	Add-on product
• CLIENT SUPPORT AND INTEROPERABILITY		
NetWare for Macintosh, Number of user licenses included	Included in Netware user licenses	5
Graphical user tools	YES	NO
• WAN SUPPORT Network link Service Protocol™ (NLSP)™	YES	Add-on product
• ARCHITECTURE		
Maximum number of user connections per server	1,000	250
Nondedicated server	YES**	NO
Single login to network	YES	NO
Additive licensing	YES	NO

NetWare Return on Investment. It makes sense on your bottom line.

NetWare 4.1 has the lowest cost of ownership in the industry. In fact, the META Group reports NetWare 4.1 can cut 25%† from the cost of managing a network. Think of it. That means your NetWare 4.1 upgrade or new purchase will virtually pay for itself in no time. Here's a chance to make the accountants smile for once.

NetWare 4.1. All this and much, much more.

NetWare 4.1 also comes with everything you need to run your network on TCP/IP, so you can run IPX or TCP/IP throughout your network. It also has built-in support for your Macintosh users. And built-in System Fault Tolerance level III capabilities. (To activate this service, all you have to do is simply purchase a license disk and you can reduce the chances of network failure to almost zero. And because it's built-in, there's no need to reload your system).

Still, we know all these features wouldn't mean diddly if they didn't work right out of the box. So we submitted NetWare 4.1 to rigorous testing—first we tested it at Novell labs, then the press took a crack at it, and finally, our toughest customers got their chance. It passed with flying colors. Without a doubt, NetWare 4.1 is set to take center stage in the industry.

We hope we've told you enough to get things underway. But in case you need more information about NetWare 4.1, just call Novell at 1-800-844-6661 or dial us in at http//www.netware.com. We'll do everything we can to help.

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Briefs

Informix profits rise

Informix Software, Inc. in Menlo Park, Calif., reported a $19.1 million profit for its first quarter, a 53% increase over the $12.5 million for the same period last year. Sales rose 54% to $147.8 million, up from $96.1 million in the same period a year ago.

Deals up, profits not

IBM Credit Corp. reported a first-quarter profit of $57.9 million for the first quarter, down from $59.1 million a year ago. New financing deals totaled $3.2 billion, a 52% increase from the $2.1 billion in the same period last year. Capital equipment leasing rose 89% and accounted for $1.2 billion of the first-quarter business, the IBM subsidiary said.

E&S sales drop

Evans & Sutherland Computer Corp. sales dropped to $19.3 million for the first quarter, down from the $26.9 million posted for the first quarter of 1994. The decrease was due to the spin-off of the Tripos business unit and the termination of a major government contract. But the Salt Lake City company's profits rose to $598,000, up from $8,000 for the period last year.

Chipcom sets record

Chipcom Corp. in Southboro, Mass., announced record sales of $86.2 million and a profit of $8 million for its first quarter, which ended April 1. Sales were up from $51.9 million in the first quarter last year, while profits rose more than 300% from the $1.9 million posted in the period last year.

NetFrame posts loss

Milpitas, Calif.-based NetFrame Systems, Inc. reported a loss of $5.3 million for its first quarter, ended April 1. The company reported a profit of $1.8 million in the period last year. The results were based on revenue of $13.1 million, down from $20.5 million in revenue during the first quarter of 1994.

Integra will abet NT migrations

By Stuart J. Johnston

Former Microsoft Corp. executive Dwayne Walker has struck out on his own.

Walker, who was director of marketing for Windows NT during its gestation period and later headed Microsoft's Solution Provider program to promote NT and the Back-Office server suite to resellers, has formed a company called Integra Technology International, Inc.

Integra's charter will be "to deliver integrated technology solutions" to businesses using client/server technologies, said Walker, who is chairman and chief executive officer. The company has offices in Bellevue, Wash., New York and Bangalore, India.

The idea for the company came from Walker's experiences as an information systems manager and his central role in Microsoft's push to penetrate the enterprise, Walker said. He officially left Microsoft in February and started the company last month.

"Our take on it is that thanks to his Microsoft position, he was really able to scope out the [NT reseller] universe and see what's needed," said Dwight Davis, editor of the industry newsletter "Windows Watcher" in Redmond, Wash. "He'll be able to exploit new [Microsoft] developments pretty quickly, and he's plugged into the [reseller] community so he's structured his services so that he can do whatever they want."

Target areas

Integra will focus on the three broad areas where Walker believes customer needs are not being met:

- Software tools for client/server computing. The company will offer The Integra Business Application Builder, due in June.
- Migration services to help users move from Unix or IBM AS/400 minicomputer applications to Windows NT-based client/server applications. Integra will also offer custom development, consulting and training services and help desk support.
- Services to help customers move into the so-called world of "new media," including development of World-Wide Web pages as well as applications that work over the Internet or wireless networks.

A major target customer group for Integra's services and tools is Microsoft's value-added resellers, who develop and deploy corporate solutions based on NT and other Microsoft products.

But despite an overall positive outlook for Walker's newest venture, Davis said Integra may have to narrow its broad scope if it is to succeed in the long run.

Integra President Dwayne Walker *targets unmet user needs*

To help Integra achieve its goals, Walker acquired Coromandel Industries, Inc., a leading developer of client/server database access tools. The Integra Business Application Builder, which is based on Coromandel's Integra product line, will work with Microsoft's Visual Basic and Visual C++ as well as Borland International, Inc.'s C++ development environments. Additionally, the company will license so-called "line of business objects," object-oriented code components that can be used to develop mission-critical applications.

Cadre acquires Dutch toolmaker

By Elizabeth Heichler

Cadre Technologies, Inc. will soon be able to fill some holes in its product line thanks to a merger agreement reached earlier this month with Westmount Technology BV in Delft, Netherlands.

Analysts said Westmount's computer-aided software engineering (CASE) tools are oriented toward information systems applications, while Providence, R.I.-based Cadre has focused its products on engineering and real-time software development.

"Cadre has long sought to get into the IS market," said Henk Bakker, a senior consultant at research firm Ovum Ltd. in London. "Westmount produces an upper CASE tool with strong links to relational databases and fourth-generation languages, squarely targeting the IS market."

The acquisition will also help solve a problem that arose for Cadre last month. It lost the rights to distribute Houston-based Protosoft, Inc.'s object-oriented CASE tool supporting the popular Object Modeling Technique (OMT) methodology. However, Westmount has its own CASE tool for OMT, and "Westmount OMT is a much stronger product than [Protosoft's] Paradigm Plus," Bakker said.

Terms of the agreement were not disclosed. But Cadre's vice president of marketing, Mory Bahar, characterized the deal as more of a stock swap than a cash transaction.

Wiel van de Berg, Westmount president and chief executive officer, will be Cadre's senior vice president of European operations and development of database application tools.

Mac clone is in the mail

By Lisa Picarille

Macintosh clone maker Power Computing Corp. is betting that low pricing via mail-order sales coupled with superior service and support will attract users to its family of three Macintosh-compatible systems. The company also expects its May 1 ship date to win it the advantage of being first to market.

Other Macintosh-compatible systems due late this summer are from Radius, Inc. and Daystar Digital, Inc. They target the high-end publishing market.

Based on the PowerPC 601 chip, Power Computing's forthcoming systems target general business users. After a slow ramp-up, the company expects to be shipping "tens of thousands" of systems by July and reach 100,000 units in the first 12 months, said President and Chief Executive Officer Steve Kahng.

The systems initially will be sold only through direct mail. Kahng said the idea was to use the one popular distribution channel where Apple Computer, Inc. does not have a big presence.

"It's a good way to get into the business," said Pieter Hartsook, editor of "The Hartsook Letter," an industry newsletter in Alameda, Calif. "If you start out with restricted access, that helps control product availability."

But Power Computing expects to branch out later.

"We will be in selected retail channels around September," Kahng said. The company will first target traditional computer stores and later expand to consumer and superstore channels.

The low road

Selling via direct mail allows Power Computing to deliver products at lower prices. Power Computing's Power 60 system, which will be available in desktop and tower models, is comparable to Apple's Macintosh 7100 but is priced at $1,995 — $800 less than a similarly configured Macintosh 7100. The Power 100 and 110 models are similar in performance to the Macintosh 8100s and will also be priced about 30% less.

Power Computing is also attempting to differentiate itself from Apple on technical support starting with a goal to connect users with live staff in less than three minutes and a 30-day, money-back guarantee.

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Ricardo Bortra
Manager, End-User Computing
Alamo Community College District
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Has it now?

Two years ago, Digital broke a string of quarterly losses, prompting talk of a turnaround.

But Digital returned to its losing ways. The company then sold off several businesses, fired enough people to populate a small city and continued to develop high-performance and high-value products based on its Alpha microprocessor technology.

Now, it's back in the black. After announcing a $74 million quarterly profit last week, Digital CEO Robert Palmer even sent out the sanguine "the worst is behind us" message.

Thousands of Digital customers around the world are wondering if that is really so. Digital has been pressing them — staffers at aging VAX sites — to make the great leap forward into client/server on the back of Alpha.

Is it a turnaround? Or just another pit stop on the same treacherous track that proved to be a road to near ruin for all the other former minicomputer makers?

To steal a phrase from Wall Street, I am cautiously optimistic that the patient is well along the road to recovery. Fueled by its energy core, which is networking and not hardware, Digital is once again growing in real terms. It is reasserting its technology pedigree as well as its proficiency as a systems integrator. I don't have proof, but it is very likely that customer confidence is growing.

However, customers should also understand that words like "turnaround" and "recovery" in the computer industry are both relative and fleeting. How can anyone suggest the worst is behind when no one has the capacity to see more than a year or so ahead?

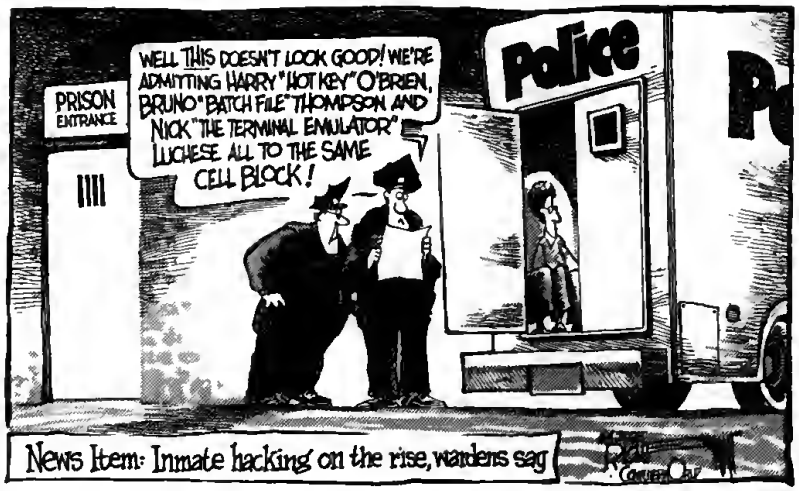
Digital needs to tend to the aspects of its business practice that slipped as it scrambled for survival. I've spoken with numerous Digital customers in the past two years and heard a litany of complaints about deteriorating support and service. That is one good place for Palmer to spend some of Digital's newfound wealth.

If you read or listen to what Digital says about itself, you would conclude that it is a company that sells Alpha hardware and PCs and some Unix. As an observer, I am mystified as to why the company doesn't say more to customers about its networking expertise. It's the glue that shapes pieces of hardware into a system. Remember the old "Digital has it now" message of 10 years ago? If they still have any "it" other than hardware, the message is muted.

Everyone likes the comeback kid, and it looks as though it is Digital's turn to be liked. Its recovery came at a steep price, including 50,000 jobs. The fact that its customers did not desert the company in droves is a fitting tribute to the people who are no longer there but who helped cement that loyalty. It is up to those remaining to sustain the momentum by putting the customer first in every single thing they do.

Bill Laberis

Bill Laberis
Internet: *blaberis@cw.com*



Windows 95? No problems here

When ditto-heads are asked whether what they hear from the ditto-meister is true, they (usually) answer, "I'm not sure, but there has to be some fundamental flaw" for there to be so much to talk about. It's the same for your Applehead in his evaluation of Windows 95 ["Flaws 95," CW, April 3]. There are thousands of Windows 95 beta testers/users whose experience invalidates the high-profile problems the trades had.

If your emphasis in the column was on the resource costs of upgrading/training, then you have the gift to recognize the obvious. If you wanted a cheap column you could put together without having to think, you chose the nudge and wink over substance.

Alan Jeude
St. Louis

FUD flinging

Boy, the fear, uncertainty and doubt (FUD) sure are flying. And the longer Windows 95 gets pushed back, the more FUD-slinging the consumers and decision-makers will be forced to endure.

Since when were Microsoft developers the authorized mouthpiece for IBM regarding OS/2 plans? And you keep the slant sliding, the FUD flying and the customers turned off by your and others' *Hard Copy* tactics. I hope Windows 95 makes it out this year so OS/2 can dispatch it as easily as it did NT. Remember?

David McKinney
Electrical Insulation Suppliers, Inc.
Atlanta

I have run Windows 95 on a variety of PCs, from a 386 with 6M bytes of RAM to a Pentium 90 with 16M bytes of RAM, without any of the problems you referred to. I disagree with your statements that Windows 95 will require massive memory upgrades and expensive user training.

If *Computerworld* chooses to participate in the trend of bashing Microsoft, that's your choice. Personally, I think that attacking a program that's still being beta-tested is at best questionable.

Mike Drips
Overland Park, Kan.

Working both ways

Thanks to Alan Ryan and Carl Orgass for making two very important points in "It's a raid" that most managers and executives miss these days [Careers, CW, April 17]: Money isn't everything; and loyalty works both ways.

An IS manager obviously missed these when he recently tried to hire me away from the consulting firm that employs me. As for Richard Boone, I find it hard to sympathize with the proverbial pot and kettle.

However, one point left out by most of the interviewees is that networking works both ways as well. Potential employees can find out which companies they can work with and which to avoid.

Susan Sauerbrey
Findlay, Ohio

Year 2000 fixes

Regarding the editorial "Users slow to face year 2000 conversion" [CW, April 10], you focused more on finding problems than fixing them.

It's true that the year 2000 involves substantial analysis, and vendor tools can help immensely in this regard. However, as the market progresses from the "find it" stage to the "fix it" stage, we expect more companies to join the ranks of customers who have established a reliable and comprehensive data routine standard throughout their shops.

Date logic can be quite complex, and many of our customers have made the business decision to buy pretested date routines off the shelf rather than reinvent their own. Also, as the year 2000 gets closer and time runs out, efficiency through standardization may become a necessity rather than a mere luxury.

Michael D. Lips
President
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San Francisco

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Clearing up pricing misinformation

Michael Cohn

Don't listen to salespeople. Don't believe the headlines. Prices have not fallen through the cellar. Deals are not aplenty.

In fact, computer pricing is now more confusing than ever. Folks, it's a conspiracy of epic proportions. You can't tell if a deal is a bust or a bargain. There are meaningless list prices, six-month deferrals, extra warranties, fancy financing and free floor mats. Pretty soon you'll just want to go home and lie down.

Let's stop the madness. Let me explain how prices really work. Then look that vendor right in the eye and demand the best price, value and solution. With luck, you might come close.

▪ Small hardware. Today's biggest problem is this desktop stuff that gives the whole industry a bad name. Prices should be dropping. We were supposed to have $500 PCs by now. Actually, I do have a $500 PC, but I paid $1,500 for it three months ago.

I guess PC guys are pretty tricky. They keep inventing faster chips, lighter laptops and cramming more megahertz onto our desks. So instead of plummeting, high prices are staying high. Some subnotebooks go for nearly $1,000 a pound. This is not good for consumers, but at least it makes lox seem like a bargain.

▪ Big hardware. Big hardware is becoming small hardware. We have drawer-size direct-access storage devices and mainframes the size of a small refrigerator. Purchasing the stuff could do wonders for my bottom line, except I can't get comfortable with hardware that's delivered in the back of a Mazda minivan.

But they tell me not to worry about price... The "five-year cost of ownership" is all that matters. This tiny new stuff saves on floor space, saves on power and saves on maintenance. But why should I care about five-year cost of ownership? It takes that long to get a "req" out of Purchasing.

Computer pricing is now more confusing than ever.... You can't tell if a deal is a bust or a bargain.

▪ Small software. All right, we do have Gates vs. OS/2, so they're practically giving it away. Rumor has it there will be disks inside boxes of Corn Flakes by the fourth quarter.

But price has nothing to do with cost. You get your free desktop software, but then you'll need to add more memory ... ka-ching! Then you'll need an on-line service ... ka-ching! And then you'll need to spend every waking moment glued to the Internet, Word-Wide Web, Mars, etc.... ka-ching!

▪ Big software. This is where a bunch of folks are getting ticked off. Hardware prices are dropping, but software still costs a bundle. There are group charges, license fees and support costs. We're shelling out a fortune and getting almost nothing for it.

It's a certified rip-off, but at last someone is doing something about it. Some of the big vendors are giving us usage charges: We get charged for software only when we use it. What a great idea (for them). The stuff is so complicated, we use it 24 hours a day, seven days a week just trying to figure it out.

▪ Labor. Even the prices for people are out of whack. Object programmers want $200 an hour. Kids fresh out of school ask for $60K. We spend more on people than we do on computers. High tech is high enough; let's stop the greed. We should all hold the line before we're all out of business. No big fees. No huge bonuses. You can get by on a programmer's income. You can go pretty far on a 2% raise ... that is, until you have to shell out a couple grand for one of those new PCs.

Cohn is still underpaid at a large computer company in Atlanta.

All sides can win with electronic catalogs

Esther Dyson

As I said in last month's column, what is exciting these days is not new products but new business models. Here is another example, once again from a computer-aided design (CAD) software vendor. The company cited last month was Graphisoft, which has an office in San Francisco. This month's example is Autodesk, Inc. in San Rafael, Calif., the maker of the AutoCAD design package.

Autodesk's new offering comes under the names MaterialSpec and PartSpec. Both are basically electronic catalogs of building blocks for various kinds of designers. They offer items such as motors, power supplies, casings and pipes, and metals or plastics, which are used to build anything from VCRs to automobiles. Parts and materials are represented as living AutoCAD data that can be loaded into any user's AutoCAD design — about 250,000 items from 17 vendors in PartSpec and 25,000 materials from 300 vendors in MaterialSpec. The breakthrough here is to get paid from both sides: the supplier of the content and the user.

The breakthrough here is to get paid from both sides: the supplier of the content and the user.

Both sides benefit. The vendors of the parts and materials get to promote their products to customers who are genuinely ready to buy. In fact, if users are designing in *someone's* products, why not specify a particular vendor's product?

The customers save time in designing: Why waste time designing a motor when they can insert the design and specifications of a real one that Parker Hannifin is selling? Why go to the trouble of configuring and constructing a plastic case when you can copy one from a catalog and then find the 800 number to locate the most convenient supplier? Moreover, the customers can easily find out what is already available on the market and learn how to get hold of it.

For now, the user still has to call or visit a local retailer, but I can imagine the day when things get even simpler. Then all you'll have to do is push an on-screen button to dial into the Internet, or perhaps the Microsoft Network. Press another button, and you'll be connected to the supplier's Web page or an order form that can handle your order immediately. Hello, Federal!

The implications of this vision are broad. First, more and more content will be subsidized, provided free or at low cost to users to sell or promote tangible goods or services. Most suppliers would be glad to support a free parts catalog if they knew it would get into the hands of every Autodesk customer.

Second, for more and more users, an application rather than an operating system will be the primary interface. With Windows or another powerful environment underneath, a user can reach the whole world through the perspective of his most intensively used application. For designers, that application is AutoCAD.

The returns aren't in yet, of course, but Autodesk has already received a lot of phone orders based on initial press coverage. In the long run, this kind of approach could enable Autodesk to lower its prices to users while product vendors subsidize the software.

Dyson is president of EDventure Holdings, Inc. in New York. She welcomes readers' thoughts and can be reached at edyson@eff.org.

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Unix's secret tax bills

Gordon Bell

The Unix Cartel — that group of vendors that supplies and maintains Unix dialects (or what I call VendorIX) — has laid open systems traps that allow its members to continue to supply proprietary, high-margin platforms. Once users buy into a platform, they are locked in and limited to those applications that independent software vendors port to that platform. Issues of compatibility and training make conversions expensive and impractical, compared with the PC industry.

"Standard Unix" is an oxymoron. Its backers claim that it's an undifferentiated, "open" standard, yet vendors maintain differentiated products. The word "standard" now means "different."

The Unix standard that responded to the Microsoft Windows NT threat is technically and behaviorally impossible. Every part of Unix that a user or program sees must be identical; hence, one source is required. The Unix dialects and the 1,170 interfaces create a gigantic makework program for downstream networking, database, middleware and application software vendors. For users, that brakes progress.

Vendors spend at least $1.5 billion annually to maintain the Unix dialects. That's more than $1,000 per copy for computer makers that have to "throw in" their VendorIX for free. A realistic "price" would be marked up six times for research and development. This would price the VendorIX platforms — especially low-priced workstations — well above the market.

As PCs and workstations converge in terms of performance and it becomes widely known that x86-based multiprocessor servers (for example, Compaq's ProLiant) are the most cost-effective, the price pressure will increase. Hardware vendors that support Microsoft's Windows and Windows NT for PCs, workstations and servers — and that don't have to maintain dialects of Unix — will have the advantage. NT runs on all platforms at a price that VendorIX can't touch.

Independent software vendors and database companies supplying their own custom database implementations ("MYSQL") with locked-in applications operate at 40% efficiency, spending most of their R&D and support maintaining about 10 versions of their code on the various VendorIX platforms. Having to maintain all those versions operates as a Database Tax resulting in 2½ times higher software prices if costs are marked up. More importantly, Microsoft's NT and SQL Server nearly eliminate the Database Tax by providing users with the benefits gained from very high volumes and low cost. Highly profitable, low-volume database prices are maintained at more than 40% of the sales price of expensive VendorIX servers. So database companies have as much as the VendorIX Cartel to lose with NT.

"Standard Unix" is an oxymoron. Its backers claim that it's an undifferentiated, "open" standard, yet vendors maintain differentiated products.

The cartel developed downsizing so its members could live well under the umbrella of mainframes, operating systems and databases. The combination of Windows and NT attacks the downsizing market by delivering desktop-compatible server software in millions of units in conjunction with the PC and x86-based server hardware firms.

The cartel has no hope of competing other than to stonewall NT as long as possible. Supporting NT SQL leads to comparing VendorIX and MYSQL platforms. If NT were out of the picture, the market could revert to "open systems" doublespeak. As prices increase, users are limited to the inherently low-volume, higher-priced databases and independent software vendor apps that run on specific VendorIX. Computing inches forward Unix by Unix, and client/server computing remains an unattainable goal.

Bell, former vice president of research and development at Digital Equipment Corp., started the National Science Foundation Computing Directorate and is a computer consultant. He can be reached at gbell@mojave.stanford.com

Can we set the pace on short rations?

Max D. Hopper

"Do more with less and do it better." Those are the corporate marching orders for the 1990s. And, the mandate for IS groups is to pace this productivity march with ever more potent and pervasive systems.

IS is at the core of the re-engineering leverage being applied to existing business processes. Likewise, broader access to more timely and pertinent business information is intrinsic to the success of flattened organizational structures and employee empowerment strategies.

Amidst these sweeping changes, IS groups — as much as and perhaps more than other departments — are finding themselves under increasing pressure to cut costs. There's an irony at work here. While we, no less than other departments, have an obligation to improve our own operational efficiency, it is not realistic to expect that we can continue to deliver competitive IS capabilities with leaner budgets in the long term.

As technology permeates the fabric of the enterprise and plays an ever larger role in business by touching every worker and changing the nature of work, it seems axiomatic that corporate IS expenditures should be rising. Yet, in many companies, this idea is apparently not even open for discussion.

The awareness among senior managers that hardware costs are rapidly declining creates a perception that the cost of implementing new systems should be declining as well. And, as we migrate from mainframes to client/server and distributed system environments, it might seem reasonable that big savings should be involved.

The awareness among senior managers that hardware costs are declining creates a perception that the cost of implementing new systems should be declining.

There are two fallacies in this assumption.

First, there is much evidence that hardware expenditures are only the tip of the iceberg in terms of total ownership costs. A Gartner Group study of client/server systems indicates that hidden support costs (software, training, maintenance, etc.) can be as high as 80% of total system life cycle costs.

While this percentage will undoubtedly decline over time, we are still in a transitional period with networked small systems still on the learning curve. We simply do not yet have the industrial-strength infrastructure to efficiently support this new world with the same levels of maintainability, reliability, availability and management control that we have in the mainframe environment.

The truth is that getting there won't be cheap, and it won't happen overnight. And, senior managers who weren't around for this tedious sorting out process during the mainframe era and take IS operational capability for granted need to be mindful of it.

Secondly, this transition to the thoroughly networked world involves a far larger scale of effort. Today, we are providing more users with far more capabilities and linking them together with a greater degree of interoperability than ever before. As we draw on a diverse range of options from a greater number of vendors in doing so, the complexities of integration expand exponentially.

These considerations erode our best efforts to contain costs, and we cannot presume they are self-evident in corporate budgetary decisions. IS executives must help senior managers understand the total costs of systems ownership and weigh those costs against the value that enhanced systems are yielding across the enterprise.

Moreover, if proposed IS budgetary constraints preclude technological parity, we will need to spell out the consequences and the inevitable cost of falling behind in this critical arena. Looking ahead, it's easy to envision that happening.

Unless companies invest an even greater percentage of revenue in IS than they have in the past, they may soon be marching double-time to close a costly gap.

Hopper, former chairman of AMR Corp.'s The Sabre Group, is now principal of The Max D. Hopper Associates consultancy in Dallas.

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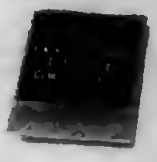

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Database market

Macintosh vendors try to boost presence

By Lisa Picarille

While industry watchers claim that the dearth of choices in the Macintosh database market may prove to be a stumbling block for widespread adoption of the platform, current Macintosh users said the handful of available database offerings meets their needs.

However, the forthcoming crop of Power Macintoshes from Apple Computer, Inc. and clone vendors provides an opportunity for new entries in the Macintosh database market. It also gives current leaders a chance to expand their presence by offering releases that target large businesses.

Currently, just three products own the lion's share of the Macintosh database market. At the high end, ACI US, Inc. offers 4D Server, and the midrange level is dominated by Microsoft Corp.'s FoxPro and Claris Corp.'s FileMaker Pro.

"The serious database stuff is being done on the PC because the Mac lacks the depth of product offerings and is not competitive with the PC," said David Kelly, a senior consultant at Hurwitz Consulting Group, Inc. in Newton, Mass. "There are some excellent products on the Mac, but there is more energy on the PC side just because the market is so much larger."

With 1994 worldwide shipments of 616,000 units, the Macintosh database market is about one-tenth the size of the overall PC database market, according to Nicole Roth, an

Database market, *page 45*

1994 worldwide Macintosh database market

Company product	Shipments	Share	Revenue	Share
Claris FileMaker Pro	385,000	62.5%	$50M	58.5%
Microsoft FoxPro	120,000	19.5%	$11.5M	13.5%
ACI US 4D Server	37,000	6%	$12.6M	14.7%
ACI US 4D First	39,000	6.3%	$2.4M	2.8%
Other	35,000	5.7%	$9M	10.5%

Source: International Data Corp., Framingham, Mass.

MCI improves productivity with CD-ROM technology

By Michael Fitzgerald

When notebook computer makers started building CD-ROM drives into their products, most observers thought the devices would appeal only to a select few users.

But at MCI Communications Corp., the built-in CD-ROM drive was a major component of a massive sales force automation project (CW, April 10).

Three of the four notebooks MCI considered had built-in CD-ROM drives. These included the eventual winner, IBM PC Co.'s ThinkPad 755CD, as well as Panasonic Computer Corp.'s V41 and Toshiba America Information Systems, Inc.'s Satellite 2150CD. MCI also considered Compaq Computer Corp.'s LTE Elite notebook, which does not have a built-in CD-ROM drive.

MCI's Rick Ellenberger: *'I require less administrative support to do a much better job'*

MCI wanted CD-ROM drives for several reasons:

- To improve its average sales pitch by allowing salespeople to use best-of-breed presentations on CD-ROM.
- To eliminate the need for sales representatives to carry paper documents.
- To make training more accessible and user-driven through the use of custom CD-ROM applications.

Driving the move to CD-ROM technology was MCI's shifting corporate emphasis. As it came to market with products such as Network MCI Business, the company recognized that its focus was as much on software and services as it was on telecommunications — and the new emphasis demanded new technology.

"The market dynamics were changing.... The assessment we made internally was ... we'd like to be in a different business," said Rahim Shah, senior project manager at MCI.

Guy Woodlief, an analyst at Dean Witter Reynolds, Inc. in New York, confirmed that the telecommunications market is changing. Carriers are trying to get businesses to use their telephones for more than just conversations.

"MCI is trying to create an environment where ... minutes have higher utility to the user and can be priced at a premium vs. ordinary voice conversations," Woodlief said. He pointed to a number of MCI initiatives, such as an Internet shopping service, that propose to get customers to spend more time on-line, hence increasing revenue per customer and profits.

But as its focus shifted, MCI realized that its salespeople were not well equipped to sell technology. For starters, "the sales force was not as exposed to technology as we would like," Shah said.

MCI, *page 49*

Simple solutions

Issue: People with little hands-on experience with technology assigned to sell networked services and other software-oriented offerings.
Solution: Outfit salespeople with notebook computers and sophisticated client/server software offerings.
Issue: Offer full-motion multimedia presentations and eliminate the need to carry reams of paper on product information.
Solution: Use notebooks with built-in telephony features, 16-bit audio and built-in CD-ROM drives.
Issue: Improve overall sales performance.
Solution: Take best-of-breed presentations and put them in a corporate library accessible to all MCI salespeople.

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High-end AT&T PCs add messaging, other features

By Jaikumar Vijayan

In a continuing bid to leverage the core communications capabilities of its parent organization, AT&T Global Information Solutions last week announced two PCs featuring preloaded messaging and document-sharing capabilities.

The Globalyst 720 and Globalyst 730 systems, which AT&T GIS said are targeted at the power business user, feature Peripheral Component Interconnect (PCI) technology and dual Intel Corp. Pentium processors. The products also include AT&T GIS's NoteIt and Wireless MailFlash messaging software and Vistium Share conferencing software.

The announcements come at a time when AT&T GIS has slipped out of the list of Top 10 U.S. PC vendors, according to figures from International Data Corp. in Framingham, Mass. The company dropped from the list despite growth of more than 80% last year.

AT&T GIS' "strategy of focusing on communication and videoconferencing capabilities has given them some differentiation in the market," said Margo Wald, an analyst at BIS Strategic Decisions in Norwell, Mass. "But from a broad perspective, they have not quite made the splash" yet that Hewlett-Packard Co. and Digital Equipment Corp. have made in the desktop market, she said.

The multimedia systems will come in at the top of AT&T GIS's line of PC and communications products, and they tap the company's expertise in communications technologies and services, said Rob Hudson, a marketing manager at AT&T GIS. The products "deliver on AT&T's attempts to merge computing and communications" on the desktop, Hudson said.

The Vistium Share document conferencing software allows users of networked PCs in different locations to work in real time on the same document. The Wireless MailFlash software lets users send messages from a desktop to remote alphanumeric pagers. A new messaging feature called NoteIt lets users leave password-protected voice or typed messages on a PC. All three software packages come standard with the Globalyst 720 and Globalyst 730.

On the hardware side, the dual-processor capable systems are based on 75- and 100-MHz Pentium processors and feature PCI and Industry Standard Architecture. The Globalyst 720 system, which has a desktop form factor, has four expansion slots and three drive bays. The Globalyst 730 has eight expansion slots and six drive bays.

The systems also feature 16-bit audio, internal speakers and 64-bit PCI graphics with up to 4M bytes of video RAM.

AT&T GIS's new high-end PC

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Briefs

PowerBook prices cut

Apple Computer, Inc. has dropped the price on its popular PowerBook 150. The price of a model configured with 4M bytes of memory and a 120M-byte hard disk has been cut to $1,089 from $1,499. Apple is also offering a new PowerBook 150 configuration with 4M bytes of memory and a 250M-byte hard disk for $1,229.

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Database market

CONTINUED FROM PAGE 43

analyst at International Data Corp. in Mountain View, Calif. That market share is in line with the Macintosh's 10% to 13% share of the overall PC market, she said.

"There is nothing intrinsically lacking about the Mac as a platform for database applications," said Jeffrey Tarter, editor of "Soft Letter," a software newsletter in Watertown, Mass. "But there is a historical perception about the Mac, and users doing serious database applications don't think of the Mac as an option. And it's too late to overcome that."

But some users said that a Macintosh database offers advantages in terms of development, support, training and costs.

"4D gives us some choices we would not have had on the PC side," said Jeff Loewer, manager of technology information systems at Colgate-Palmolive Co. in Piscataway, N.J. The company uses 4D and has more than 1,000 Macintoshes. "We are able to develop systems on one platform for both the server and clients, and we can transition stand-alone applications to client/server applications on the Mac also."

However, Loewer acknowledged that the absence of a cross-platform version has been an issue for the company, which also has hundreds of PCs.

"There has been one restriction to 4D, and that is we can't support the Windows side [as a client]. Our company is not predominantly Mac, just our division is, and having a Mac-only solution has not allowed us to take as our databases enterprisewide," he said.

ACI plans to deliver the Windows version of 4D in July, with 4D Server for Windows due out in the second half of this year, according to sources briefed on the Cupertino, Calif., company's plans.

Observers said that historically, the Macintosh has had to provide good integration with other platforms, a circumstance that has been both good and bad for the adoption of the Macintosh as a database server.

"It's especially getting easier to integrate non-Macs into Mac environments," Kelly said. "But that also means that if there is a new database development, it is likely being done on Windows since users can do it on a PC and know that they can access it from the Mac."

Easy to use

Users agreed that Macintosh database integration is relatively simple.

"It's an easy way for us to migrate into another environment. 4D meets all our cross-platform scenarios," said John Papa, a partner at The Carson Group, a financial services and consulting firm in New York with slightly fewer than 100 Macintoshes, some PCs and a handful of Sun Microsystems, Inc. SPARCstations.

Papa said he finds that using the Macintosh as a database is cost-effective.

"Five years ago as a start-up we didn't want to spend a lot of time and money on database development and training. The Mac allowed us to immediately jump into graphically presentable and easy-to-use databases," Papa said. "We didn't want to spend $50,000 to $60,000 a year for a systems administrator. We set up a simple solution that over the past five years has been scaled up to a very large database."

Some observers said that simple tasks are about all that users are doing with Macintosh databases.

"It's absolutely incredible that the leading Mac database product [FileMaker] is a flat-file manager with limited features and no programmability," Tarter said. "What does it say about the market where the leading product is a toy?"

Claris is addressing those issues with FileMaker Pro 3.0, a relational version for Windows and the Macintosh due out later this year, according to a spokesman for the Santa Clara, Calif., developer.

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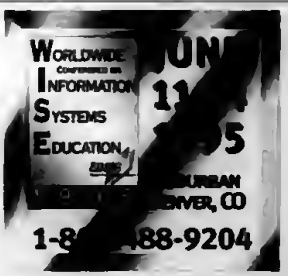

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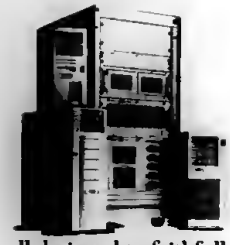

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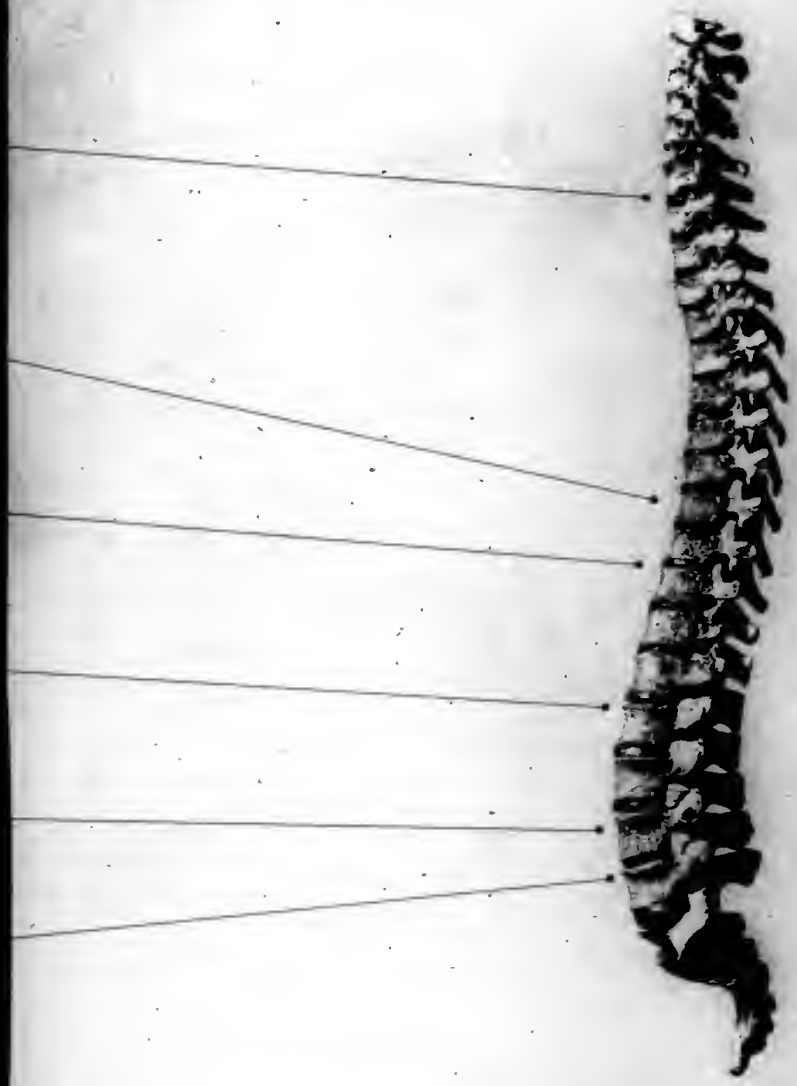

Fig. 1 Backbone

profitable business demands: keep running. Compaq's CD-based SmartStart ensures a smooth, integrated installation, and our Insight Manager constantly monitors for potential problems — which, if encountered, are covered by the Compaq Pre-Failure Warranty. For more information, call 1-800-853-9518 or visit our Web site at www.compaq.com. We can help you get the performance you need. As well as the support.

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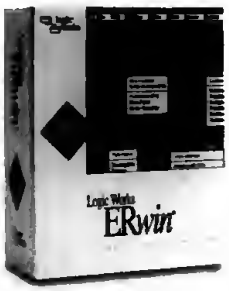

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Desktop proliferation creates legacy woes

By Steve Moore

For many information systems managers, the term legacy still conjures up images of older mainframe applications and the machines they were written for. But client/server computing has been around long enough to generate its own legacy of older hardware and software — a legacy that could spell trouble for IS departments that ignore it.

Facing continued growth in the number of different desktop hardware and software components in their enterprise client/server networks, IS managers run the risk of technology gridlock caused by multiple incompatible versions of computers and applications.

"It's a monster of a problem. The fact is that a lot of machines and applications in corporate environments are 6 to 8 years old," said Greg Lewis, president of Personal Computer Assets Management Institute, Inc. in Rochester, N.Y. Counting both legacy and newer PC hardware and software, there are more than 1 billion components that must be inventoried and managed in U.S. corporate computing environments, he said.

But many users are solving legacy PC problems by combining smart procurement policies with the latest hardware and software inventory and management techniques.

"We're sending 386 machines home with people so they have home computers, and we've been getting rid of anything older than that," said Katherine Epes Barrett, a consultant for a large Washington-based financial services organization. For new equipment, "we buy machines with components that can be stripped out" after the machine is obsolete, she said.

Monstrous management challenge

Managing legacy PC hardware and software is rapidly becoming more difficult

60 million PCs are in use at U.S. businesses and government agencies, and each has an average of seven software packages and four hardware components that must be inventoried and managed.

Of those, 10% will be DMI-enabled machines by the end of the year.

There are 80,000 computer hardware and software vendors in the U.S., including mainframe, midrange and PC makers.

Source: The Personal Computer Assets Management Institute, Inc., Rochester, N.Y.; the Desktop Management Task Force, Hillsboro, Ore.

Eliminate the problem

Another manager took steps to stop end users from customizing desktop machines. "We eliminated as much of the board-swapping as we could, and there are no add-in boards in the machines we're buying these days," said John Duhiel, manager of technology and planning at utility Boston Edison Co.

Legacy PC software raises still other issues. It is a mistake for users with a lot of legacy PC systems to "force-fit new software on old computers," said Cheryl Currid, president of Currid & Co. in Houston. But if two corporate departments have different versions of a key application, that can cause problems too because users of one version may not be able to read the file format of another version, she said.

Another mistake some users make is to take asset depreciation schedules too literally, said Tom Nolle, president of CIMI Corp. in Voorhees, N.J. Even though most organizations write off PC systems aggressively so that they can continue investing in newer systems, they do not have to throw away those systems as soon as they are written off. "Every day you keep them thereafter it's like found money. There's no expense, but you keep using them," he said.

Still, the elimination of older systems may be a prerequisite for broader use of newly emerging, standards-based desktop systems management applications, he said. "Problems that can't be solved universally sometimes aren't worth solving partially," he said.

OCR software hits new highs

Advanced releases offer improved features, greater accuracy

By Tim Ouellette

Thanks to advances in optical character recognition (OCR) software, users may see fewer scrambled characters on their screens after a scan is complete.

OCR vendors have released products that move beyond character recognition to word and document recognition.

Caere Corp., fresh from its acquisition of Calera Recognition Systems, Inc., has released WordScan Plus 4.0, which features predictive optical word recognition (POWR). The software recognizes a whole word without first having to recognize each individual character by homing in on the most mathematically probable interpretation for the image.

The POWR engine, developed by Calera, builds on the 32-bit adaptive recognition technology used in previous versions of WordScan. Los Gatos, Calif.-based Caere claims Version 4.0 increases accuracy by up to 40%.

Such gains are important, one analyst noted. "OCR is not 100% perfect. But OCR needs to maintain the integrity of the document as a whole, so users can recognize as much as possible," said Thomas Koulopoulos, president of Delphi Consulting Group, Inc. in Boston.

In a similar vein, Ligature, Inc.'s 32-bit CharacterEyes for Windows 2.5 passes over an image a second time to look at the characters in the context of the surrounding characters and words, which improves accuracy by up to 25%, according to the Burlington, Mass., company. Ligature also incorporates Hewlett-Packard Co.'s Accupage technology, which allows scans from colored or stained backgrounds.

CharacterEyes is targeted at entry-level and low-volume users. Jo Anne Wang, database coordinator at Health Plus, a health maintenance organization in Albuquerque, N.M., uses CharacterEyes to read documents from other companies.

"I hate working with paper," Wang said, noting that the software is easy to use. Wang added that it fulfills her basic requirement of moving the documents to the screen, though she has trouble reading PCX files.

Choosing to address the overall format of the document, Xerox Corp. in Palo Alto, Calif., has released TextBridge Professional Edition 3.0, which offers full document recomposition. The product maintains the characteristics of multiple columns, text and tables. Users can capture the tables and data in documents and port them directly into word processing applications or spreadsheets.

On the productivity side, Caere's WordScan adds an Acquire Text command to the file menu of Windows applications. And a Microsoft Corp. Word button lets users perform OCR, convert the output to rich text format and drop it into Word without any cutting and pasting. Xerox places a TextBridge OCR button in most Windows word processing applications.

Adobe Systems, Inc. in Mountain View, Calif., is looking to provide both an OCR package and a low-level imaging system with Acrobat Capture. The software recognizes the different elements of a page and produces an exact electronic copy in its Portable Document Format (PDF). The file can then be viewed or searched by users on any platform. Users can also perform full text searches across multiple PDF documents. The product includes Adobe's Acrobat software and 41 Adobe fonts. It costs $2,995.

Can you see what I'm saying?

Vendor	Product	Feature
Adobe	Acrobat Capture	Saves entire page to a Portable Document Format file, which is fully searchable
Caere	WordScan Plus 4.0	Predictive Optical Word Recognition engine
Xerox	TextBridge	Document and data table recomposition
Ligature	CharacterEyes 2.5	300 char/sec. text capture; scanning from colored backgrounds
Mitek	Network Intelligent Fax Mail	Hand-printed and machine-printed recognition for fax routing

Mitek Systems, Inc. in San Diego moved its Quickstrokes OCR engine into a specialized area — fax routing. Mitek's Network Intelligent Fax Mail identifies hand-printed characters in addition to typed characters, but it cannot read cursive handwriting.

After verifying the recipient of a fax, the Mitek product checks the name against a database and forwards the fax over the network. If a name does not match or the writing is illegible, the fax is sent to the network administrator's mailbox. For added security, the administrator can read only the cover page when verifying the recipient of the fax.

Prices for Network Intelligent Fax Mail start at $295 for five users. Caere's WordScan Plus 4.0 costs $595, and Xerox's TextBridge Professional costs $349. At the low end, Ligature's CharacterEyes costs $49.

MCI

CONTINUED FROM PAGE 43

The typical MCI salesperson had limited access to desktop computers. MCI had roughly one PC for every 10 employees in most of its branch offices, meaning that salespeople often had to wait in line to use a system. MCI hopes to change that by giving them notebooks and carefully structuring training.

The automation project, which is still in the installation phase, may offer MCI other benefits such as the potential to cut administrative staff.

Rick Ellenberger, senior vice president of worldwide sales for the Business Markets unit in Atlanta, no longer uses support staff to prepare presentations and file information and reports.

Since being outfitted with a notebook and learning how to use it, "I require less administrative support to do a much better job than I used to do, and my vice presidents are seeing the same thing," he said.

Down the road, MCI has even bigger hopes for the notebooks. The company wants to use the machines as platforms for videoconferencing among the sales staff and even as a means to get personal videoconferencing broadly accepted.

One reason MCI chose IBM, despite the price of its notebooks, was the investment protection it felt it would gain through features such as an integrated telephone. The ThinkPad was the only notebook considered with such a built-in device.

Connectix Corp. has shipped RAM Doubler for Windows, a memory management utility.

According to the San Mateo, Calif., company, RAM Doubler for Windows compresses infrequently used parts of RAM, cleans up conflicts in the under 1M-byte memory space and eliminates unnecessary use of system resources.

RAM Doubler for Windows requires Windows 3.1 or 3.11; an intel Corp. 80386, 1486 or Pentium processor and 4M bytes of RAM. The utility costs $99.

▶ *Connectix*
(415) 571-5100

Sequent Computer Systems, Inc. has introduced DecisionPoint for Financials, configurable software for financial data access.

According to the Beaverton, Ore., company, DecisionPoint for Financials integrates data stored in Oracle Corp.'s Financials with other internal or external data to help organizations implement financial, marketing and operatinnal decisions.

Constructed as a data warehouse, DecisionPoint for Financials runs on a system separate from the financial production systems. It includes software to sample multidimensional schemas and to scrub, integrate, aggregate and load extracted data into the warehouse. It also has a graphical security administration tool, report templates and Simple Network Management Protocol management.

Pricing for DecisionPoint for Financials starts at $20,000.

▶ *Sequent Computer Systems*
(503) 626-5700

Summagraphics Corp. has announced SummaFlex, a cordless, pressure-sensitive graphics tablet, and Summa Expression, a small-format, pressure-sensitive graphics tablet.

According to the Austin, Texas, firm, SummaFlex and Summa Expression are flexible, pressure-sensitive digitizer tablets with three-dimensional graphic work surfaces. SummaFlex measures 18 in. by 24 in. and was designed to turn a desktop or work space into a full-functioning digitizer tablet. Summa Expression was designed for graphic artists and designers with small work areas and measures 6 in. by 8 in.

The SummaFlex tablet costs $849, and the Summa Expression tablet costs $389.

▶ *Summagraphics*
(512) 835-0900

Cadkey, Inc. has introduced Cadkey for Windows, an integrated two- and three-dimensional computer-aided design and manufacturing software product.

According to the Windsor, Conn., company, Cadkey for Windows features a pop-up tool bar, accelerator keys, model-to-dimension associativity, hidden line removal, shading, rendering and stereolithography output for rapid prototyping applications.

Cadkey for Windows runs on Microsoft Corp.'s Windows 3.1, 3.11 or Windows NT 3.5 and costs $495.

▶ *Cadkey*
(203) 298-8888

BusLogic, Inc. has announced two wide, fast bus master SCSI-2 host adapters for Extended Industry Standard Architecture systems: the BT-757C with single-ended active termination and the BT-757CD with differential termination.

According to the Santa Clara, Calif., company, the adapters support up to 15 SCSI devices without the need for device drivers. They also let users run 8- and 16-bit SCSI devices simultaneously. The adapters double the transfer rates across the SCSI bus from 10M bit/sec. to 20M bit/sec.

The BT-757C adapter costs $509, and the BT-757CD adapter costs $649.

▶ *BusLogic*
(408) 492-9090

Product short

DataEase International, Inc. has announced DataEase 5 for Windows, a PC database system for developers and business people. The programmable relational database management system was designed for information systems departments building enterprise systems. Cost: $495. DataEase International, Trumbull, Conn. (203) 374-8000.

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Chevron plans to keep people talking

By Suruchi Mohan

As the novelty of electronic mail wears off in some companies, users are starting to demand the next evolutionary step — information sharing.

Chevron Corp. in San Francisco is trying to meet its employees' needs by taking them into the information age. One of the ways it is doing so is through a discussion database technology that gives staff a forum for exchanging ideas and information.

Several advantages

Along the way, the company hopes to reap many benefits, such as reduced travel costs, a logical order to group discussion and a common forum for sharing best practices.

"We saw that groupware could change the way organizations work," said George Alameda, information technology manager at Chevron U.S.A. Production Co. in Houston. "People could be on very diverse teams and spread out geographically. Through the use of mail, it became intuitive to share information and manage the information environment that mail was giving us."

The transition to a discussion database started in August of last year, said Jonathan Simon, a systems analyst in Houston. The company had already standardized on Microsoft Corp.'s Office suite of products, and some of the more technologically savvy users were clamoring for a discussion database.

Chevron's Jonathan Simon *says many users wanted Notes capabilities but the cost and features of Collabra's Share better fit his company's blueprint*

Chevron had pockets of Lotus Development Corp.'s Notes and "the pressure was great from users who wanted Notes-type capabilities. But it didn't fit into the long-term strategy and was too costly," Simon said. "If you take Microsoft applications and put in a layer of Notes, you lose seamless operation."

With Novell, Inc.'s NetWare as the LAN operating system of choice and the adoption of Office making an upgrade to Exchange inevitable, it soon became clear that the company's solution lay outside Notes. Besides, most users at Chevron did not need the application development capabilities of Notes, so it seemed a waste to put Notes on every desktop that required basic collaborative computing.

On Site

Chevron Corp.
San Francisco

Challenge: To give employees at diverse locations ways to share ideas and knowledge.

Strategy: Collabra's Share groupware and Microsoft's Exchange running over high-speed networks.

Goals: To facilitate information sharing and identify the best business practices while reducing travel costs.

In October, Simon started evaluating Collabra Software, Inc.'s Share 1.0. In November, he negotiated an agreement with the company. "We looked at their long-term strategy; what impressed us was that they kept adding value on top of Exchange. We didn't want a throwaway product," he said.

This agreement was followed by an aggressive pilot program, with 250 users, in the beginning of January. "The aggressive thing was to prove to the E-mail group in San Ramon, Calif., that

Chevron, *page 57*

Lotus builds on its team computing strategy

By William Brandel

To differentiate its desktop applications from those of its competitors, Lotus Development Corp. will use Comdex/Spring '95 in Atlanta this week to launch its team computing strategy.

As the name implies, team computing focuses on the group use — instead of personal productivity features — of its desktop applications. Lotus is placing its hopes in its belief that users will demand electronic mail and groupware integration in their next generation of desktop applications.

To accommodate this perceived demand, Lotus is pushing team computing enhancements in all its desktop applications, including Ami Pro, 1-2-3, Freelance Graphics, Approach and its calendaring and scheduling product, Organizer. The technology will be included in the SmartSuite applications suite as well as in NotesSuite, a bundle that comprises SmartSuite and a Notes client.

Break it down

Lotos' team computing can be broken down into three major categories: Team Consolidate, Team Review and Team Show.

Team Consolidate lets users consolidate contributions from different users into one document. For example, a team leader could initiate a project in 1-2-3 that would include contributions from other 1-2-3 users. The initiator will alert potential contributors and then accept or reject contributions and edits from them.

With Team Review, the initiator can determine who will be included in a team effort and how the information will be distributed. He can also control editing rights.

Team Show enables the user to perform point-to-point on-line screen shows. For example, a Freelance user could present a screen show to a remote PC user running the same application at the other end of the phone line.

Team-enabled applications from Lotus will be available on 16-bit Windows, Windows 95 and OS/2 platforms. These applications will be able to exploit transports such as Notes, but will also be compatible with Lotus' CC:Mail and Novell, Inc.'s NetWare, as well as Microsoft Corp.'s Exchange server when it becomes available, officials said.

What's in a name?

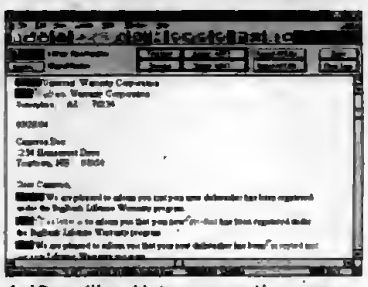
With the introduction of its next generation of desktop applications, expected in the Windows 95 time frame, Lotus will rename Ami Pro as Word Pro.

Analysts briefed on the team computing strategy said the technology is impressive. However, Lotus has its work cut out for it in positioning the product for users.

"The concept is good and the new Word Pro [the new version of Ami Pro] is hot," said Karl Wong, an analyst at Dataquest, Inc., a market research firm in San Jose, Calif. "However, the total pitch is still too vague and unclear at this time."

"There's only so far the desktop vendors can go in pushing the individual productivity focus," said Bob Flanagan, an analyst at the Yankee Group, a consultancy in Boston. "Including workgroup capabilities in the desktop applications is the next logical step for Lotus."

However, the Lotus plan comes with limitations, analysts said — namely, that users have to be in an all-Lotus desktop environment to take advantage of the team computing capabilities of the applications. For example, to collaborate on a word processing document, all the users have to be running team-enabled Ami Pro.



Ami Pro *will enable team computing among users of the word processing software*

This strategy is expected to receive a warm reception at sites that have standardized on SmartSuite or NotesSuite running in conjunction with Notes and/or CC:Mail. However, this scenario represents a small fraction of user sites, analysts said.

But the strategy gives Lotus better footing at Notes sites. Some of the team computing aspects specifically leverage and require Notes. To further push this position, Lotus officials say they will offer the NotesSuite bundle for $299. This has some appeal at Notes sites.

"We made our original suite decision before Notes, and now we are reassessing it," said a user at a major insurance company in Maryland. "We want things seamless, whether it is with Notes, the Internet or how they work with tools like Visual Basic."

But, the allure of Notes integration is not lost on Lotus' competitors. Microsoft's Office and the PerfectOffice suite from WordPerfect, the Novell Applications Group, are expected to include field exchange via Notes/FX in their next generation of applications.

"Like everyone else, we have legacy applications that our end users have grown up with and are familiar with," said Barry McCurdy, director of research at First Albany Corp. in Albany, N.Y. "We want integration with Notes, but if an investment analyst wants Excel and it has field exchange, we will give them Excel."

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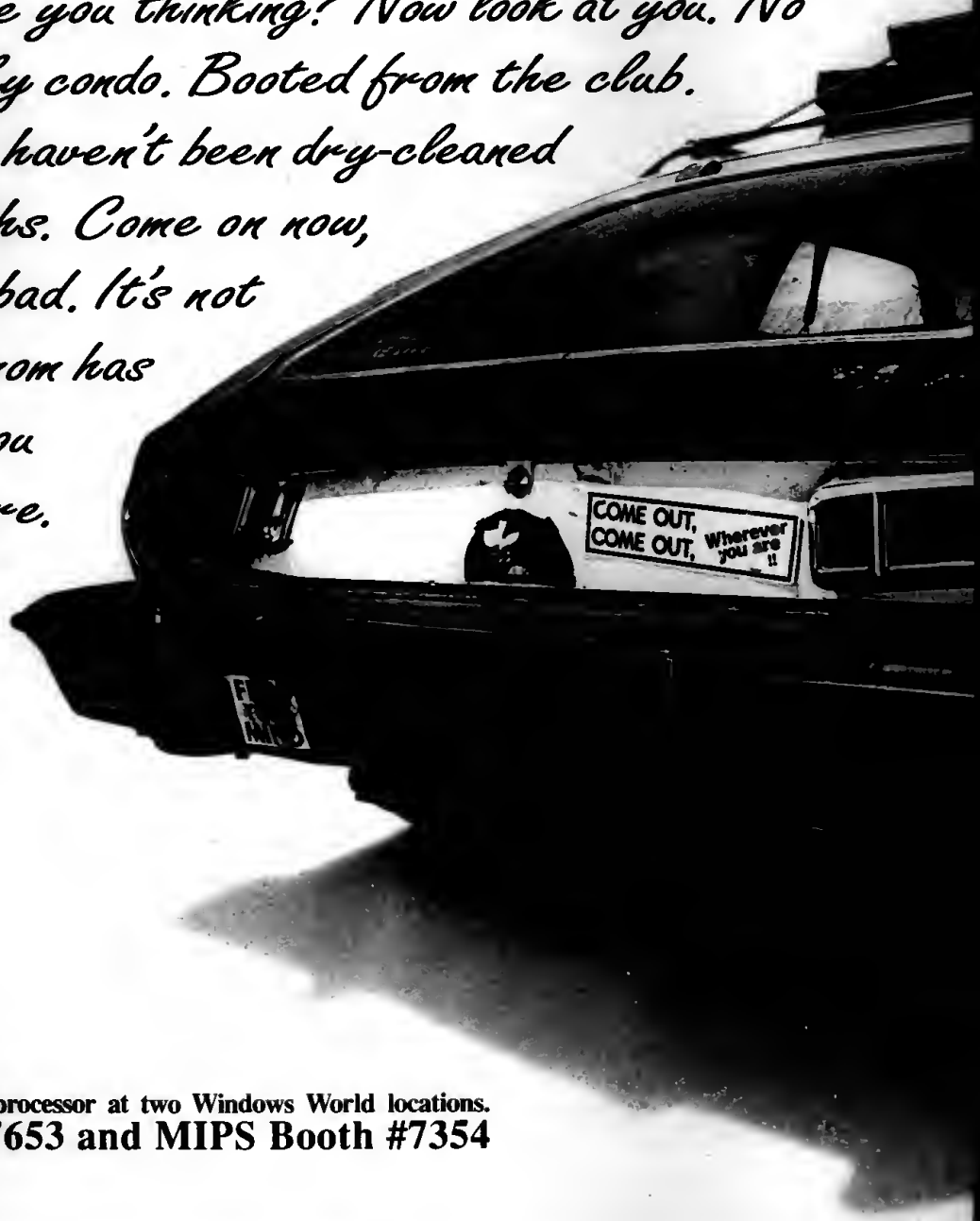

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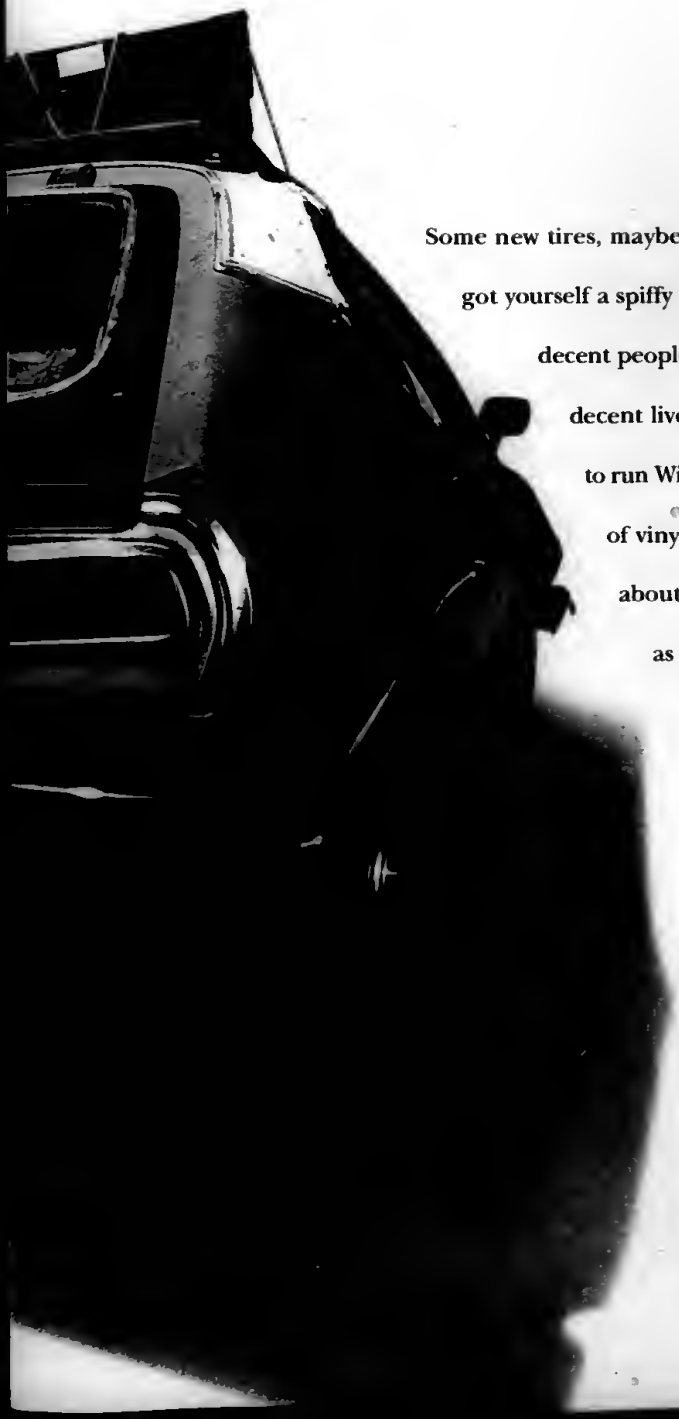

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Two-minute mysteries

Analyzer switch lets technicians investigate calls fast, user says

By Patrick Dryden

Usually only the most critical LANs have their own protocol analyzers attached and ready for emergency troubleshooting because such devices are expensive. That means businesses can lose transactions or productivity while technicians find, transport, connect and focus an analyzer on a problem segment.

Such downtime can cost a company thousands of dollars per minute.

To speed the troubleshooting process, an Atlanta start-up has developed software-controlled switches that let technicians quickly check any of several sources using a single analyzer. Since last fall, LAN-hopper Systems, Inc. has built models for Ethernet and Token Ring LANs and wide-area links.

Some vendors are adding test ports to hubs and switches for easier diagnosis from the wire closet, but LAN-hopper Systems seeks to streamline the sampling of installed networks.

Because the company's switches operate at the physical level, each can transparently sample the data stream of any network segment that installers attach to its ports, regardless of the protocols in use, said Jim Baugh, the firm's chief technical officer.

An analyzer or other test device plugs into a port, and control software runs on a local PC. This menu-driven program lets technicians assign easily recognized names to each segment, select which one to test and define a scanning and reporting routine that switches among segments.

Troubleshooters can run the LAN-hopper, Ring-hopper, UTP-hopper and WAN-hopper systems remotely as well.

Options can include modem access, Simple Network Management Protocol (SNMP) agents or support for Distributed Sniffer software from Network General Corp. A graphical control interface called Pathmaster, designed to simplify connection of multiple analyzers and switches, is scheduled for tests in May, Baugh said.

Command center created

The first models of the switches have helped several early adopters centralize their protocol analyzers for faster troubleshooting, and some have found additional test benefits.

Moody's Investor Services in New York brought coaxial and unshielded twisted-pair cables from 12 floors into one command center equipped with an Ethernet LAN-hopper and a Network General Sniffer. That analyzer used to sit idle or watch just one LAN and required from 15 to 30 minutes for setup, said Frank Santiago, manager of network services.

The new configuration scans all 12 LANs hourly for problems such as duplicate IP addresses. Technicians can check out problem calls in as little as two minutes, Santiago said.

"This gives me the equivalent of a Sniffer on every floor," Santiago said, noting just one drawback: Technicians can analyze only one segment at a time.

At The New England life insurance company in Boston, technicians can begin testing any of 20 Token Ring LANs within five minutes instead of within 20 minutes or more.

Past difficulties

In the past, Distributed Sniffer analyzers directed their reports to a central management console, but technicians frequently had to unplug and move them to examine different rings, said Tom Fontanella, assistant vice president of telecommunications services at TNE/Information Services.

Five 32-port UTP-hoppers equipped with SNMP agents also enable central analysis of all LANs throughout Hewlett-Packard Co.'s Atlanta-based data processing center.

Because many HP LANs actually cluster Unix servers for remote access by offices, technicians can check applications easily, said Mark Conroy, network engineer for HP production engineering. Using HP OpenView, he can point diagnostic tools at hub ports in the server room that would be hidden by bridges and internetwork switches.

"This gives me armchair analyzer capability from the 14th floor," Conroy said.

One evaluator wants LAN-hoppers specifically to maintain manageability as he increases aggregate bandwidth by adding switches.

Switcheroo

New switch software from LAN-hopper will connect an analyzer or probe to multiple sources

Products	LAN-hopper, Ring-hopper, WAN-hopper, UTP-hopper
Purpose	Allows network troubleshooters to focus a test device on any selected source, independent of protocols, without having to move or recable
Benefits	Speeds evaluation, spreads the cost of analyzers and helps monitor switched segments
Price	$2,400 to $9,900, with two to 32 ports

"The problem is very real: Ethernet switching makes your network management tools quite blind," said Jim Ryan, information resources network planner at the University of Massachusetts Medical Center in Worcester, Mass.

Some new switches Ryan is installing allow probing of one segment at a time, but he said the LAN-hopper Systems approach looks like what he needs to retain the visibility of segments supported by routers and older switches.

Chevron

CONTINUED FROM PAGE 53

supports the Microsoft Mail network that we were not going to adversely impact the Microsoft Mail users in Chevron," Simon said. "What impact would replication and large file transfer have on the network?" The network used Cisco Systems, Inc. routers with T1 and switched 56K bit/sec. telecommunications lines.

As a result, one person in the San Ramon facility monitored all the Collabra Share traffic that went over the Mail network. The other traffic on the network was normal Mail traffic as well as applications, file transfer and SQL inquiries. Simon tested at full capacity. He replicated 20M-byte databases and put those on continuous replication to see the maximum traffic he could generate. "We pushed it to its limit," he said.

Information sharing

Users in five states shared information on a variety of subjects. These included groups such as the gas integration team, which shared information with teams at different sites; facilities engineering; and quality improvement, which tried to leverage best practices.

But "the real problem for us was not application development by sharing information and sharing it faster than the competitors," Simon said. The real problem, as in many similar cases, was cultural. "We stirred up a lot by doing this pilot. Chevron Information Technology Co. in San Ramon, Calif., wants Notes, but we don't need those capabilities."

Those who were interested in Notes, however, were told that the production company did not want to put that on every desktop, said Tim Nagy, a production engineering adviser in Houston who now has both Notes and Share. But, he said, apart from a few shortcomings, such as the glaring absence of a spell checker in Version 1.0, he has been happy with the discussion database capabilities of Collabra.

"People have been very receptive. The more remote people are, the more enthusiastic they've been. It almost seems to be a function of how far they are," Nagy said. That is because it is often hard for remote employees to find the expertise they need on a particular subject locally. In the larger offices, it may not be all that important.

Despite the obvious benefit of discussion databases, managers were concerned that they could be a distraction. But in the long term, if the databases reduced the mass mailings of messages in the company, then they would be seen as a definite plus by managers.

This mind-set is keeping with analyst predictions about the popularity of discussion databases. For example, Michael Bragen, a principal at Business Management Consulting in Lexington, Mass., said users should see some of the benefits of discussion database software this year. "Lotus has done a good job of showing the importance, but the market has been hesitant in jumping with both feet," he said.

Companies such as Chevron may well spearhead the movement to adopt such technology.

AIIM '95 yields alliances

By Tim Ouellette

Several agreements and alliances announced at the Association for Information and Image Management (AIIM) '95 show have firms integrating their various strengths in imaging and workflow, sales channels and market position.

- **Microsoft Corp.** in Redmond, Wash., will integrate basic features of imaging software from **Wang Laboratories, Inc.** in Lowell, Mass., in Windows 95 and Windows NT. The two companies will also develop openly available workflow application programming interfaces, supported by Microsoft's Exchange and Wang's Open/Workflow.
- **Eastman Kodak Co.** in Rochester, N.Y., will use **Wang**'s Open/Workflow and Open/Image software to develop customized imaging solutions. The companies will also develop common document imaging architectures.
- **Martin Marietta Information Systems & Technologies** in King of Prussia, Pa., has signed marketing, sales and technology exchange agreements with **Network Imaging Systems Corp.** in Herndon, Va., **Sietec Open Systems** in Don Mills, Ontario and **Wang** to use each firm's imaging and workflow products. Martin Marietta will combine the products with its systems integration and program management capabilities. The alliance targets the adoption of image objects in enterprisewide mission-critical applications for large corporate customers.
- **Recognition International, Inc.** in Dallas will integrate Professional Edition document imaging software from **Watermark Software, Inc.** in Burlington, Mass., with its Plexus production-level imaging and workflow server software to provide enterprisewide applications.
- **FileNet Corp.** in Costa Mesa, Calif., and **Meta Software Corp.** in Cambridge, Mass., will jointly develop and market a software interface between Meta Software's business process re-engineering tool, WorkFlow Analyzer, and FileNet's object-oriented Visual WorkFlo software. Expected in June, the product will let users create a business model and move it into the workflow.

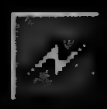
Is it Notes

with the power of five

desktop applications,

or is it five desktop applications

with the power of Notes?



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Micropolis unveils desktop video-on-demand server

By Terho Uimonen

Micropolis Corp. in Chatsworth, Calif., recently announced AV Server 50, which was designed to provide cost-effective desktop video-on-demand for workgroups.

Smaller and more compact than its predecessors in the AV Server line, which provide simultaneous video access for up to 64 users, the AV Server 50 supports up to 16 simultaneous analog video/audio output channels, Micropolis said.

With the forthcoming proprietary VideoNet and VideoShare software management tools, AV Server 50 enables video server accessibility over LANs as well as accelerated development of video server applications, officials said.

For users whose PCs have third-party PC-TV tuner and overlay cards, the AV Server line offers a cost-effective solution for enabling networked computers to display analog video on monitors or external televisions, Micropolis said. The cost for the cards is roughly $150 per client, officials said.

AV Server 50 is available now.

Pricing for AV Server 50 with the VideoNet network manager software for multiuser control, which ships in June, will begin at $20,000. Four Motion Picture Experts Group-2 video channels and 6G bytes of storage are included.

Library available

Also shipping in June is VideoShare, Micropolis' prepackaged front-end software, which will let users build video libraries, officials said.

The VideoShare host, which houses the video library application, can reside on any PC, and users can access then library using the VideoShare Client browser.

Suggested pricing for VideoShare is $595 for one library and five clients. Each additional client costs $79.

A VideoShare developer's kit that enables value-added resellers and systems integrators to create customized applications will carry a list price of $2,500, which includes licensing, Micropolis said.

Uimonen is a writer at the IDG News Service.

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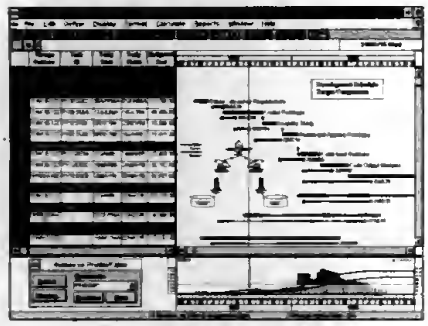

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Briefs

Manager packages united

NetLabs, Inc. in Los Altos, Calif., has integrated its NetLabs/Asset Manager 2.0 with Horizons Technology, Inc.'s LANauditor software to support inventory data collection from various operating systems. Those systems include DOS, OS/2, Windows and Macintosh PCs in addition to the Unix systems that Asset Manager already supports. Separately, Hewlett-Packard Co. licensed San Diego-based Horizons' LANauditor for integration with its HP Asset Management Service, which previously focused on Unix environments.

AST gets NetWare bundle

AST Research, Inc. has announced it will preload Novell, Inc.'s NetWare 4.1 on selected models of its Manhattan server. The NetWare bundle includes preinstalled software for network and power management and virus protection. AST also said it is offering an uninterruptible power supply and a Peripheral Component Interconnect Ethernet card option on the Manhattan servers. The company also rolled back prices by 13% to 22% on some low-end and mid-range Manhattan servers.

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Jeffrey Henning

Groupware dilemma

When it comes to groupware, there are two types of IS managers. IS Manager Type 1 is afraid that the groupware implementation he has overseen will not meet upper management's need to radically transform the company. IS Manager Type 2 is not worried in the least.

What is the secret to the confidence of all those IS Manager Type 2s? Just this: They are retiring this summer. The only groupware in their future is a tango with the social director at Pleasant Valley Retirement Center.

Those of you whose career planning is less shrewd may find that now is a good time to take that sabbatical you always wanted. If you don't, you'll find that management has latched onto groupware as "The Next Big Thing," sure to revolutionize your company where total quality management, empowerment and open-book management all failed before.

For some of you, doubtless in your twenties or thirties, early retirement won't work. Once your IS management has all retired and left you in charge, you'll realize that you're up next to take on the groupware challenge. Hey, you grew up with Jimmy Carter's presidency, New Coke and reruns of *The Brady Bunch* — you're used to diminished expectations. So here's an overview of the groupware industry.

The leading product is, of course, Lotus' Notes. I say "of course" because whenever you ask someone what groupware is, he always says, "You mean like Notes?" rather than truthfully answering, "I couldn't tell the difference between groupware and a Monkees groupie." Notes primarily handles electronic mail and database management.

Wait, you say, don't I have E-mail and a database? Yes, but Notes purports to combine them in a powerful, transforming way. Imagine taking four mop-top wanna-bes off the street, hiring the best songwriters for them, teaching them to play instruments and commissioning a comic script-writing genius. Bam, it's the Monkees! They've been transformed into a musical powerhouse. Now if only somebody could do the same for Notes.

Groupware technology

Wait a minute, some of you might be thinking. Upper management wants to transform the company so that people work together better. Isn't it naive to trust technology alone to accomplish this? Wouldn't it be better if the company engaged in team-building exercises?

No, if these upper managers can rely on a technology such as groupware to transform their company, then it is your responsibility to carry it out. So now you see why so many of your fellow IS managers, now sunning in Florida, realized that Notes would never solve the problems that corporate management should have been addressing with a broad range of initiatives.

Well, there is some good news if you don't like Notes. Microsoft has announced Exchange, its powerful groupware product. Microsoft understands your groupware concerns. That is why it is offering a special promotional offer on Exchange — if you pay for it now (and promise to place an order with the Home Shopping Network for "The Complete Episodes of The Monkees"), Microsoft will guarantee not to release Exchange before you retire.

So if senior management is hell-bent on transforming the firm through groupware, tell them to wait for Microsoft so you can thoroughly evaluate all options. (No one was ever fired for waiting on Microsoft.) You can hope that by the time Exchange is released, senior management will have moved on to the next big thing and will no longer be looking to groupware as a cure-all, or you'll be safe in your Florida retirement community.

Henning is an analyst at Constellation International, a consultancy in Norwell, Mass. He can be reached on CompuServe at 74774,157.

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[redacted]

Ptech, Inc. has announced Framework 3.1.11 for business process design and automation.

According to the Cambridge, Mass., company, Framework 3.1.11 is a set of object-oriented modeling tools that allow the capture, design, prototyping, customizing and automation of an evolving business process of a company or division. Each user shares a common set of definitions and symbols that let the business process design begin at any point.

Framework 3.1.11 features Ptech Import/Export, which assigns an object identification to each object and enables it to be recognized through exchanges and alterations.

Framework 3.1.11 is available for Unix and Microsoft Corp.'s Windows NT platforms.

Framework 3.1.11 costs $6,000 for a Unix version and $5,000 for a Windows NT version.

▶ *Ptech*
(617) 577-7100

Alantec Corp. has announced PowerHub 6000, an intelligent switching hub for high-end workgroups and departments.

According to the San Jose, Calif., company, PowerHub 6000 delivers LAN backbone switching hub technology to workgroup and department LANs. It includes multiprotocol routing, full-featured bridging, Virtual LAN support, Ethernet and 100M bit/sec. or "fast" Ethernet support, and a Fiber Distributed Data Interface (FDDI).

PowerHub 6000 supports up to 36 Ethernet ports and either one or two "fast" Ethernet ports, or one FDDI ring.

Pricing starts at $9,950.

▶ *Alantec*
(408) 955-9000

Keyfile Corp. has announced Keyfile Open SQL Gateway.

According to the Nashua, N.H., company, Keyfile Open SQL Gateway lets Keyfile users access relational databases with standard SQL applications. It also lets them query any workflows, documents and folders that are being managed through the product. The product gives users access to development languages that are now generating SQL queries.

Keyfile Open SQL Gateway was designed to provide relational databases with information on user activities such as document and folder properties, cross-references to documents folders and workflow history status.

Keyfile Open SQL Gateway provides access to relational databases from companies such as Microsoft Corp., Sybase, Inc., Informix Corp. and Oracle Corp.

Keyfile Open SQL Gateway costs $2,495.

▶ *Keyfile*
(603) 883-3800

Maximum Computer Technologies, Inc. has announced Doublevision for X Window Systems, workgroup remote-control software for Unix.

According to the Kennesaw, Ga., company, Doublevision for X Window Systems allows users to share X applications across any TCP/IP network, including those that offer dial-up protocols. It also is hardware and software independent.

Users can share applications, regardless of display type. Doublevision for X Window Systems works with any X software or hardware to provide automatic color, resolution and font translation. It offers support for user conferencing and security to prevent unauthorized access.

Pricing for Doublevision for X Window Systems starts at $495 per two-user license.

▶ *Maximum Computer Technologies*
(404) 428-5000

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Source: Survey of COMPUTERWORLD CD subscribers, May 1993.

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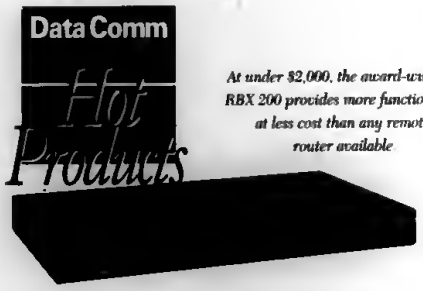

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GREAT WESTERN'S JESSE KING: OUTSOURCING IS WILL SAVE MILLIONS, 72

State builds budget infobahn

By Mitch Betts
FRANKFORT, KY

Iowa floated a bond issue to build its own fiber-optic information superhighway for $100 million. North Carolina got legislative appropriations to outsource its $160 million information superhighway.

Those states went shopping for what observers call "Cadillac networks." But the commonwealth of Kentucky is taking an approach that is more like buying a Chevy on the installment plan.

The so-called information highways typically carry voice, data and video traffic — using Asynchronous Transfer Mode (ATM) or frame-relay technology — for schools, universities, medical centers and state and local government agencies. Local businesses can also piggyback on the networks.

Last December, Kentucky awarded an information highway contract worth $8.7 million the first year and perhaps $80 million over its 10-year life. The winning bid came from a team of local exchange carriers led by South Central Bell Telephone Co. in Louisville, Ky., and LCI International, Inc., a McLean, Va.-based long-distance carrier.

ON SITE

Commonwealth of Kentucky
Frankfort, Ky.

Challenge: To build an affordable, statewide information superhighway with on-ramps in 120 counties.

Strategy: To award a 10-year contract, with guaranteed government traffic, to a bidding team led by local exchange carriers.

Results: An ATM network that will save $1 million a year. (But, the losing bidders are protesting the contract.)

However, the contract is on hold because the three losing bidders — AT&T Corp., MCI Communications Corp. and MFS Communications Co. — have filed protests complaining that the local exchange carriers had unfair advantages in the competitive bidding process.

David A. Ballard, director of network services at Kentucky's Department of Information Systems, said he hopes the dispute will be resolved by July 1 so that migration from the state government's leased lines to the Kentucky Information Highway can begin.

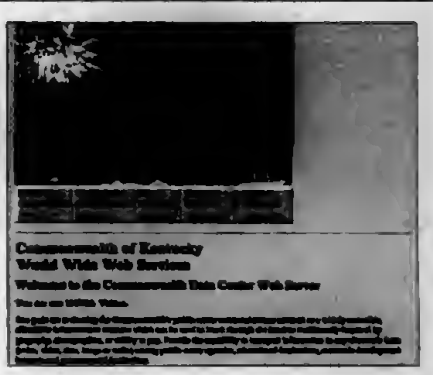
Happy with price

In essence, Kentucky decided to pay for the new network out of its regular telecommunications budget because getting additional funds from the legislature was out of the question.

"One reason [for the pay-as-you-go approach] is that we don't have any money," quipped Stephen N. Dooley, commissioner of the IS department.

"Our goal was to break even [with the current budget], but we were able to get significant cost savings. We're ecstatic about the pricing," Ballard said. The win-

Kentucky, *page 72*



That ole Kentucky home page

Kentucky already has a presence on the World-Wide Web, with a home page run by the commonwealth's Department of Information Systems. This month, Kentucky became the first state to add a "virtual tour" of its tourist attractions on the Web.

The next step is for the state government to get its own Internet access node

"We're beginning to swamp our university connection, and they politely asked us to move on," said Stephen N. Dooley, commissioner of the IS department.

—Mitch Betts

Summit addresses growth, security issues for Internet

By Gary H. Anthes
SAN DIEGO

A small cadre of networking wizards who have guided Internet evolution over the years said the ad hoc management practices of the past are no longer adequate. They are calling on users and vendors to increase funding for the Internet as federal support is withdrawn.

They also said users and vendors must pay more attention to security issues if the Internet is to be used for electronic commerce.

In addition, the group is urging vendors to migrate to a new version of IP, but it is not certain if the vendors will do so, they said.

"The Internet is outgrowing its administrative underpinnings," said Vinton Cerf, president of the Internet Society, which held its first Summit conference here recently. "In 1983, there were 200 machines on the 'net, and in 1995 there are 5 million. That's just a tad scary."

Computers attached to the Internet	5 million
Countries connected to the Internet	94
Registered Internet Protocol networks	100,000
World-Wide Web sites	37,000
Rate of growth	9% to 12% per month
Projected computers attached to the Internet in 2000	180 million

Source: Internet Society, Reston, Va

Waiting game

Three regional bodies that register IP addresses and perform other administrative chores are being swamped with requests, and that has led to delays in some users getting on the 'net.

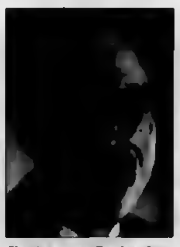
A typical wait is now 15 working days when theoretically such requests could be handled in a day, said Mark Kosters, co-manager of InterNIC Registration Services for North America at Network Solutions, Inc. in Herndon, Va. "We are getting 1,000 messages a day, with 700 requests for new or updated domain names. Growth has far exceeded our expectations," he said.

Nevertheless, some would like the three registries to take on new and demanding tasks such as maintaining directories of Internet users.

U.S.-based InterNIC receives its funding from the federal government; that will end in about two years under a plan to phase out government support for the Internet. Jon Postel, head of the Internet Assigned Numbers Authority, said InterNIC needs more funding, and those funds should come from users — Internet access providers and end users who come to InterNIC for services.

That has been vital to successful operation in Europe, where InterNIC's counterpart is funded by 138 service providers, Postel said.

It is not clear how great an impact registration fees would have on end users, but under one government proposal, users would pay $100 per year to an independent registration authority for maintenance of a domain name.



The Internet Society's Vinton Cerf: *The number of machines on the Internet is getting 'just a tad scary'*

Old protocol

On the technical front, the Internet community is still trying to decide what to do about an aging IP, the protocols that route data packets between networks. The IP's 32-bit address space is running out of capacity to support new hosts, and it lacks a number of features, such as security, optional service qualities and more flexible routing.

After months of controversy, a committee of the Internet Engineering Task Force (IETF) recently published specifications for IP Version 6, with a 16-byte address field and many new features such as encryption. However, there is some fear that vendors and users will not move to it in a uniform way.

The future of IP Version 6 depends a great deal on what the largest vendors decide to do, according to Scott Bradner, co-chairman of the IETF group that wrote the IP specification. "Moving to IP Version 6 is a nontrivial exercise," he said. "Its prospects probably come down to decisions at a few big companies such as Microsoft and the cable TV labs."

Jeffrey Schiller, area director for security on the Internet Engineering Steering Group, warned that security threats on the 'net will increase. "Now it's mostly kids joyriding on the 'net, but as money winds up on the 'net, we'll see real espionage types."

Schiller warned against believing that an Internet firewall can protect corporate assets. "If your only defense is a firewall and someone figures out how to get through it, you are in deep doo-doo," he said. "You must use cryptography."

Network management

Common interface unites management suite

By Patrick Dryden

The management platform war has escalated with Bull HN Information Systems' announcement that its software for controlling enterprise networks, systems and associated functions is now available in the U.S.

Bull's Integrated Systems Management (ISM) platform is a suite of network management applications that share a common database and an object-oriented interface. It also represents Bull's attempt to establish a beachhead in the U.S. market.

ISM is a mature management solution that is in its third version. The platform is already in use at roughly 400 sites throughout Europe, said Claude Derue, product marketing director at Bull, whose U.S. office is in Billerica, Mass.

Some 27 vendors, including Bay Networks, Inc. and Cabletron Systems, Inc., said they will make their products and services work with ISM. Novell, Inc. and Microsoft Corp., among others, said they will market it, and Tandem Computers, Inc. has adopted ISM as an option for its customers worldwide.

Bull also introduced central sign-on and administration of security via ISM for mainframe, Unix and network operating systems.

ISM lets administrators actively manage all elements of their network with ease, Derue said. That is because applications in six domains — networks, PC stations, systems, databases, security and telecommunications — share object definitions and data, with integration agents translating among the myriad protocols, he said.

With Bull's system, users can get the information they need with a single query, said Tim Wilson, an analyst at Decisis, Inc., a consultancy in Herndon, Va.

"Bull has the technology today, ahead of the major vendors," Wilson said. "But the downside is that they're not even a blip on the radar here. They have a major uphill battle to fight."

The program to integrate third-party applications with ISM should pave the way for acceptance in the U.S.

Bull will add extensions to Novell's server agent to enable several NetWare management functions, such as monitoring, inventory, software distribution and security, through ISM, Derue said.

But potential users may still balk at trusting everything to Bull, Wilson said. "This is almost like an outsourcing decision" because users must commit to both ISM's object repository and Bull's integration services, he said.

Pricing for ISM modules and console software varies by network configuration. AccessMaster, for example, ranges in price from $100 to $350 per user.

Supporting Bull

Groupe Bull is seeking support for its object-oriented platform to manage systems and networks. Partners promising pieces for the ISM framework include the following:

3Com, Bay Networks, Cabletron Systems
Integrating management of their network products, Transcend, Optivity, Spectrum, respectively

Epoch Systems, MTI
Providing enterprise backup/restore tools

Microsoft
Allowing ISM to access Windows NT managers

Novell
Extending server manager to add new functions

Oracle
Managing Oracle databases

Remedy
Integrating help desk and trouble ticketing

Bull's suite

Key functions include the following:

- Systems: Monitor and automate tasks such as job scheduling and backup
- Databases/Applications: Manage Oracle and other corporate data
- Networks: Manage multivendor, mixed-protocol networks (SNA, SNMP, CMIP)
- PCs/Workgroups: Manage Novell, Microsoft and TCP/IP LANs as well as software distributions and configuration
- Security: Integrate authentication and management of users networkwide

Key to interactive success: Keep it simple

By Kim S. Nash and Ellis Booker

Look out, Mr. Couch potatoes are going to change the way you — and users of your applications — work.

Elsewhere complicated interactive TV systems are behind the scenes, the various cable, telecommunications, software and entertainment companies must make them look as simple as pie to the average consumer.

The concept seems too logical not to carry over into business computing.

"Sooner rather than later, we'll see truly usable GUIs in corporations ... though we sure aren't returning to them now," said one Windows developer.

Moreover, consumer applications operated by remote controls in the hands of average Joes and Josephines will eventually raise the bar on the graphical user interfaces (GUI) we use at work.

Certainly, there are basic differences. For example, home viewers typically sit 10 feet away from their screens, necessitating the use of icons that are at least 10 times bigger than [illegible]. And the consumer navigation tool — the [illegible] — is far more limiting than the keyboard [illegible]

According to [illegible] at Bell Atlantic [illegible]

bytes of RAM typical of today's set-top boxes, Lasky said. "We're doing a lot of innovating with memory management," he added.

Lasky declined to give details about just what approach his team is taking to make managing memory more efficient, but he said he expects much of the technique and new technology being created for interactive TV to wash up on business shores.

Take cross-pollination. For its user interface design team, Bell Atlantic has hired all sorts of professionals, including graphic artists, movie graphics experts, documentary filmmakers and thinkers from the MIT Media Lab.

The overriding theme for these people is simplicity, Lasky said. Bell Atlantic has to [illegible] an interface that is so easy that just one to two minutes of training is needed.

Of course, for developers of [illegible] tions, it is not so neat. Corporate [illegible] A greater number of tasks [illegible] ordering the latest Sly Stallone [illegible] are [illegible] and built [illegible] Zulp desk workers.

Bell [illegible] and [illegible] TV [illegible] gulum [illegible]

"I [illegible]

[illegible] interactive TV, [illegible]

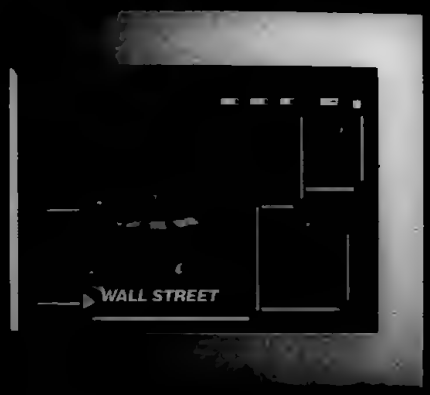
Briefs

NetStar adds ATM

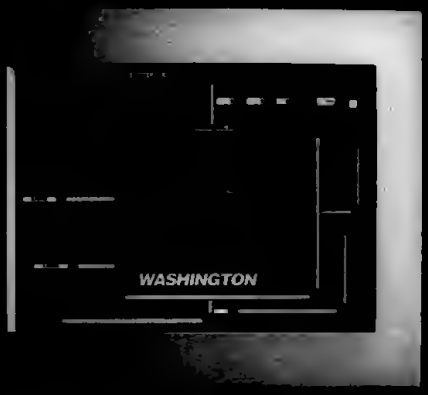
NetStar, Inc. in Minneapolis plans this week to ship an Asynchronous Transfer Mode (ATM) adapter card for its GigaRouter, a high-end backbone router initially aimed at supercomputer networks. The router can handle up to 16 of the 155M bit/sec. ATM cards, NetStar said. The first customer for the ATM devices is MCI Communications Corp., which is using GigaRouter as part of a project for linking the five supercomputing centers funded by the National Science Foundation.

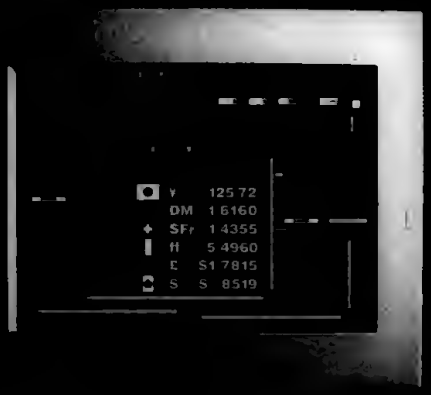
WAN app touted

Concord Communications, Inc. in Marlboro, Mass., last week announced the availability of its new WAN Health application for managing wide-area network bandwidth utilization, error rates and router performance. WAN Health is available now as a stand-alone product for $20,000 or as a module of Concord's Trakker network management system for $12,495.



HOW WALL STREET'S SMARTEST BROKERS MAKE SURE THEIR INVESTMENTS NEVER GO DOWN





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Centralized Control

Windows 95 gives you one simplified, unified, "mini-database" for all your configuration files. The system Registry eliminates the confusion of config.sys, autoexec.bat, .INI files, etc. It allows user-specific settings, such as personal desktop preferences and network access. It includes PC hardware-specific settings. It includes system policies, which allow IS professionals to control configuration and override user settings.

Remote Control

Install and configure the Windows 95 operating system on your users' PCs without leaving your desk. Control which parts of the system you install, and automate the procedure. You can decide who has network privileges, access to control panels and even which applications users have access to. The Registry lets you efficiently manage and support each of your user's desktops. You can change individual user preferences and privileges. You can make global changes that affect all users. You can remotely monitor systems and performance for more efficient troubleshooting. By using network management applications designed for Windows 95, you can access the Registry locally and remotely. Windows 95 comes with agents for many management standards such as Remote Procedure Call (RPC), Simple Network Management Protocol (SNMP) and, shortly after release, Desktop Management Interface (DMI).

Crowd Control

You control network access from a single location, where validated user logon is authenticated by the security structures of Windows NT™ Server and Novell® NetWare® User Profiles allow different users to log onto any connected PC and see "their own" desktop. Each name and password retrieves a user profile from the Registry, dictating desktop layout, fonts, network connections, shared resources and access privileges to applications and data. Users can work productively anywhere on the network.

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Great Western banks on outsourcing

By Neal Weinberg

Great Western Bank's recent buying spree stretched its information systems department to the point where the California-based thrift has decided to focus on writing loans and leave wiring LANs to the pros.

After an abortive attempt to expand the company's information technology infrastructure in-house, the bank is now in the midst of a $325 million, multiyear project to outsource its information services — except for the main data center in Chatsworth, Calif.

Jesse King, *senior V.P., says Great Western will save $4M to $5M a year from outsourcing*

The goal is to reduce costs and improve customer service, said Jesse L. King, senior vice president and controller.

King said he figures the bank will save $4 million to $5 million a year by taking the outsourcing route. Over the life of the seven-year contract with AT&T Global Information Solutions, that comes to about $30 million.

Plus, the bank does not have to make a capital investment in the equipment, and it hands off the operation, maintenance and repair of the network to AT&T GIS, which is setting up shop at the bank's Chatsworth center.

Missing link

Under a strict timetable laden with severe late penalties, AT&T GIS is installing a frame-relay network linking 420 branches and 200 lending offices in 23 states to the main hub in California. The frame-relay network will provide the underlying, high-bandwidth structure necessary for the bank to implement an entirely new deposit system.

The $160 million contract with AT&T GIS was signed in November 1994, and the entire network must be up and running by April 1996. That is when new deposit software from Hogan Systems, Inc. goes on-line.

Already, certain pilot branches are on the frame-relay system, according to King. The 20-month project to replace the deposit software is on schedule, he added. Andersen Consulting is managing the conversion.

On top of that, Electronic Data Systems Corp. is putting in new software for check processing.

It is crucial that the outsourcing effort succeed for the bank to remain an independent player in a time of intense industry consolidation, King and other observers said.

Bruce Harting, an analyst at Salomon Brothers, Inc. in New York, said he applauds Great Western's efforts, noting that the bank is "overdue on expense reductions."

King conceded, however, that the upheaval involved in an outsourcing project disrupts people's lives. About 125 bank employees became EDS employees; another 21 people went over to AT&T GIS. And the information technology department is in the process of dropping from about 770 people to fewer than 500.

Even with all the changes, however, outsourcing the main data center was deemed "too big a step" for both cultural and financial reasons. The bank was not ready to relinquish control of its central repository of financial data, King said.

Before its outsourcing moves, King explained, the bank was primarily a thrift institution concentrating on writing mortgages. But then Great Western embarked on a strategy of buying the deposits of bankrupt banks that had been taken over by the Resolution Trust Corp.

For example, Great Western bought the 119 branches and $4.1 billion in assets of San Diego's HomeFed Bank in December 1993 for $151 million. That catapulted Great Western's deposits to $24 billion, making it the third largest financial institution in California.

ON SITE

Great Western Bank
Chatsworth, Calif.

Problem: Major acquisitions have stretched IS department resources to the limit.

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Out of its league

As Great Western embarked on its acquisition strategy in the early 1990s, the IS department attempted to handle the increased volume in-house. IS expenses grew, but the "skill sets" did not, King said.

After an attempt to roll out a new system at 29 branches failed, Great Western concluded that it should stick to its core competency and leave computing to the experts. King was hired in 1993 to slash IS costs and upgrade the level of service.

David Hochstim, an analyst at Bear, Stearns & Co. in New York, said Great Western's outsourcing effort could have a major payback in terms of cutting costs and improving services.

The potential downside is getting locked into a long-term contract that reduces the bank's flexibility, he said.

King looks at it the other way. By not owning the equipment, Great Western will have an easier time when and if it wants to move up to an Asynchronous Transfer Mode network, for example.

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CONTINUED FROM PAGE 67

ning bid is expected to cut $1 million from the state's annual $15 million voice/data networking bill.

For example, a 56K bit/sec. line under the new contract will cost 42% less than it does now, and a T1 line will be 55% less, Ballard said. The savings will stem from the length of the 10-year contract and a guarantee that Kentucky's executive branch agencies will use the network.

Twelve state data networks will be consolidated into one, according to Ballard. Also, the network services can be marketed to the private sector at rates that the state public service commission will set.

Source of contention

"The state's networking business had been split up, but a consolidated network with guaranteed government traffic is a big chunk of business. So it is not surprising that the bidding process has become contentious," observed Milford H. Sprecher, an analyst who tracks the state government IS market for Federal Sources, Inc. in McLean, Va.

A key feature of the state's request for proposals (RFP) was the requirement for a network access point in each of the state's 120 counties, not just in the major cities. With such access points, even the state's most rural areas would not face higher, distance-sensitive charges for access to the backbone.

"Kentucky wanted the cost of access [to be] the same for everybody, even though the cost of service is higher in the boonies," Sprecher said.

Ballard added that he was happy that the winning bid promises to provide ATM service within six months. The RFP had required ATM service only within two years of the contract award.

For states trying to attract new businesses, building a showpiece information highway is becoming a competitive necessity.

"When companies are looking at where to go, they're not just looking at water, transportation and power anymore. Telecommunications facilities are the new infrastructure issue," Dooley said.

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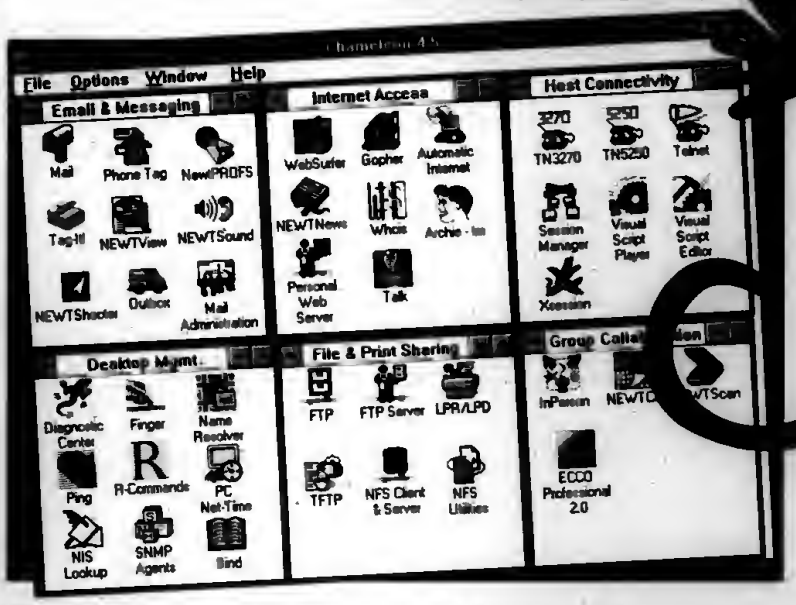

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Stan Schatt

Which switch: Stay tuned

In the not too distant future, TV shows at 2 a.m. will be more entertaining for network managers than the current late-night crop.

Of course, there will still be the commercials for personal injury lawyers ("Don't pay until we collect!"), vocational schools ("Learn how to be a brain surgeon in the comfort of your own home") and psychics ("Let Madame Polly discover when you will meet the woman of your dreams").

But soon there will also be commercials for Ethernet and Token Ring switches. These devices are becoming so prevalent and inexpensive that they are bound to become a commodity item. Snappy TV spots are sure to follow.

Last year, I surveyed network managers at large sites and discovered that more than 40% have an interest in some sort of switch. We asked about Ethernet and Token Ring switches, even though the latter was not readily available, and we found tremendous interest in both.

It's not too difficult to figure out why users are so interested. The average number of nodes per LAN continues to grow rapidly. LANs based on Banyan Systems' Vines are averaging close to 50 nodes each, while Digital's Pathworks LANs are about to crack the magic 100-node barrier.

When we examine the 135,000 establishments in Computer Intelligence InfoCorp's database, we discover an ever-increasing number of network traffic-intensive applications migrating down to the LAN.

Bit-mapped applications, particularly those for the financial and insurance industries, are proliferating like phony Rolex watches in Hong Kong.

Remember, Ethernet was developed for bursty traffic. But nowadays, LAN traffic is more likely to resemble the steady, heavy traffic found on a Los Angeles freeway any time of the day. Have you watched the red light indicators on your intelligent hubs lately? Utilization is clearly starting to drift into the danger zone despite LAN segmentation.

> No one wants to buy a product that is going to be declared a dinosaur the following year (Do you hear that Microsoft and Intel?)

Switches offer a cost-effective way to address a traffic problem at its workgroup source. Why upgrade the entire LAN backbone when the real problem is performance among a group of five or six heavy data users? Alantec in San Jose, Calif., has some very sophisticated switches with built-in routing capabilities that enable the LAN as well as the workgroup to run efficiently.

The one product that really excites me is a switch from Whitetree Network Technologies in Palo Alto, Calif., with the catchy name WS3000. I would have preferred something more memorable, such as The Desktop Jetstream. This stackable switch automatically adapts to handle Ethernet and 25M bit/sec. Asynchronous Transfer Mode (ATM) traffic.

Present and future solutions

What is so appealing about this product is that it solves an immediate problem while providing a migration path to the next performance level.

No one wants to buy a product that is going to be declared a dinosaur the following year. (Do you hear that, Microsoft and Intel?) I think more and more LAN products will be evaluated on whether or not they offer a smooth migration path to the next evolving technology.

As far as I'm concerned, I'd rather buy a switch, particularly a switch with a migration path to ATM, than fight LAN traffic congestion.

Schatt is a LAN service director at Computer Intelligence InfoCorp in La Jolla, Calif.

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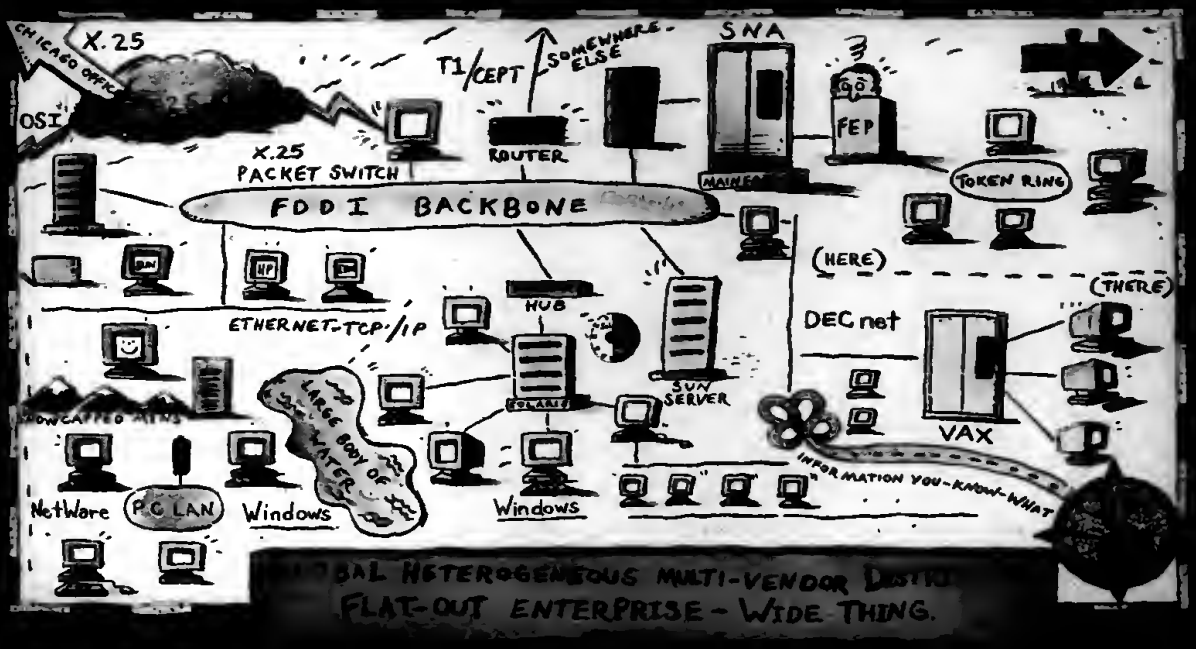

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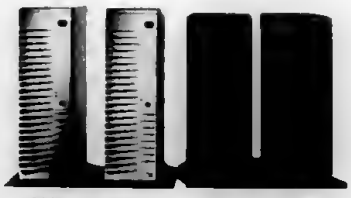

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Ascend Communications, Inc. has announced Max 4000, a wide-area network access switch for analog, Integrated Services Digital Network (ISDN), switched digital and frame-relay dial-in traffic concentration.

According to the Alemeda, Calif., company, Max 4000 concentrates simultaneous dial-in calls from analog, ISDN and frame-relay circuits onto a single high-speed digital line. This lets users replace adapters, routers, terminal servers and modem racks with high-speed digital trunks.

Max 4000 is designed to support up to 48 V.34 analog modem users at speeds of up to 28.8K bit/sec.

Pricing starts at $18,500.

▶ *Ascend Communications*
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Security Dynamics Technologies, Inc. has announced upgraded hardware access control modules (ACM) that provide security for the new generation of high-speed modems with rates of up to 115K bit/sec.

According to the Cambridge, Mass., company, the high-speed hardware modules work with Security Dynamics' SecurID Card to provide user authentication technology to remote users. This is achieved via secure two-factor authentication through a one-step log-on.

The modules connect directly with any RS-232 asynchronous host and provide access through leased lines, dial-up modems, workstations or terminals.

Pricing for the modules starts at $650. SecurID Cards start at $34 per card.

▶ *Security Dynamics*
(617) 547-7820

McAfee Associates, Inc. has released BrightWorks 2.0, an integrated enterprise network management suite for Novell, Inc. NetWare 3.x and 4.x networks.

According to the Santa Clara, Calif., company, BrightWorks 2.0 contains modules for server monitoring, server performance tuning, advanced scripting, enterprise metering, inventory and software distribution. The product also has a help desk.

Two-year subscription fees for BrightWorks 2.0 start at $42 per node for 50 nodes.

▶ *McAfee Associates*
(408) 988-3832

Symantec Corp. has announced Norton Antivirus for Novell, Inc. NetWare 2.0.

According the Cupertino, Calif., company, Norton AntiVirus for NetWare 2.0 protects NetWare servers and lets administrators manage workstation and server virus protection across DOS, Windows and Macintosh platforms.

The product features cross-platform virus alerts and reports as well as customizable virus protection. It supports NetWare Directory Services, NetWare 4.1 and Windows 95.

Pricing ranges from $599 to $2,799, depending on the number of users.

▶ *Symantec*
(408) 253-9600

XCD, Inc. has announced XJet IV Plus, an Ethernet interface card for connecting Hewlett-Packard Co.'s Modular I/O printers and plotters to LANs.

According to the Tustin, Calif., company, XJet IV Plus plugs into the Modular I/O slot on HP printers and connects directly to the high-speed internal bus of the printer. This lets it operate at a high speed without external boxes or cabling.

XJet IV Plus supports many operating systems: Unix TCP/IP, Novell, Inc.'s NetWare, Digital Equipment Corp.'s LAT, Apple Computer, Inc.'s AppleTalk, Microsoft Corp.'s Windows NT 3.5 and Banyan Systems, Inc.'s Vines.

XJet IV Plus costs $495.

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IN SEARCH OF 100% UPTIME, 88
NEW PRODUCTS, 89

Alpha lures database makers to port

By Neal Weinberg

Oracle Corp. was the first, but the other major database vendors are running hard to port their software to Digital Equipment Corp.'s 64-bit Alpha platform.

Sybase, Inc., Computer Associates international, inc. and Informix Corp. are all planning to make their databases available on the 64-bit Alpha systems.

Andrew Allison, editor of the newsletter "Inside the New Computer industry" in Carmel, Calif., said it is not surprising that all the database companies are jumping on the Alpha bandwagon. "The performance gains are literally irresistible," he said.

The 64-bit databases are expected to be used for data warehousing, highly technical applications and decision support. But not everybody needs that kind of power.

"It's just like anything else," said Dennis Cottle, a systems analyst at Carolina Power & Light Co. in Raleigh, N.C. "When does everybody need that 33rd bit? How much power do you really need?"

With 20G bytes of data stored in his system and an upgrade looming, Cottle is a candidate for the 64-bit database. He said the decision will come down to one factor: cost.

Recently, Redwood Shores, Calif.-based Oracle came out with a Very Large Memory (VLM) option for its Oracle7 database, and the VLM option was designed specifically for Digital's new TurboLaser enterprise server [CW, April 17]. This option breaks through the memory limitations of 32-bit systems.

	Oracle	Sybase	Informix	CA
Porting to Digital's Alpha?	Yes	Yes	Yes	Yes
When?	Now	Q3 1995	Q3 1995	No date available

Oracle President and Chief Executive Officer Larry Ellison said that with 32-bit systems, the largest amount of data that can be stored in memory is 2G bytes. But the VLM option uses 64-bit addressing to shatter that limit. If users choose the VLM option, up to 14G bytes of data can reside in memory. Accessing data that is already in memory is much faster than pulling the data back from disk.

"I think it's pretty slick," said Larry Burwell, data processing manager at Atlantic Federal Credit Union in Dallas. "I think it's going to be a pretty hot product.

With a 6G-byte database, Atlantic Federal might be looking at the Digital/Oracle system in the next 12 to 18 months, Burwell said.

Burwell does have concerns about the reliability of the in-memory database, such as what happens to the data if the system goes down.

The lineup

For Digital, the Oracle announcement represented the first significant commercial application of its 64-bit technology, according to Terry Shannon, an analyst at Illuminata in Hollis, N.H. But it will not be the last.

CA has been actively developing an Alpha port for its Ingres database software for about a year, said Alan Paller, director of open systems at the Islandia, N.Y., company. He declined to say when the software will be available.

"Taking advantage of Alpha's larger address space dwarfs the performance from other methods," Paller said. When an entire database is stored in memory, the improvement is measured in orders of magnitude, he added

CA is also working to take advantage of Alpha's clustering capability and is moving to integrate higher availability and improved security features, Paller said.

Sybase is developing an Alpha port of its interactive Query Accelerator, according to Erin Kinikin, manager of data warehousing at the Emeryville, Calif., company. Sybase expects to have a beta version available in the current quarter and a final version out in the third quarter of this year.

Sybase is taking a different approach. The company is using 64-bit addressing to "take out the I/O bottleneck." But most of the data stays on disk. Sybase said it is a more cost-effective and flexible solution that "won't be using up all the memory on the first query."

Informix is working on an Alpha port that will be included in its next release of informix On-Line Dynamic Server, said David Watson, manager of database marketing at the Menlo Park, Calif., company.

He said the 64-bit technology will let users build giant databases of hundreds of gigabytes and keep the key 5% to 10% in memory for fast access.

Hitachi: Users to pay heavy price for IBM's software

By Craig Stedman

The Skyline Series mainframes introduced this month by Hitachi Ltd. are the unequivocal leaders of the System/390 pack in throughput. But the Hitachi systems also are likely to be out in front in the less favorable category of highest software cost when they start shipping in the fourth quarter.

Users can expect to pay more in run their software on the Skyline machines than on current ES/9000-class systems. IBM tied new, higher pricing for MVS and its other System/390 software to Skyline. Several other mainframe software vendors said they also expect to charge increased licensing fees to put their products on the Hitachi hardware.

A typical grouping of major IBM software that costs $118,000 per month on the biggest ES/9000 would be $148,680 per month on a full-size Skyline, a 26% premium, according to an analysis by Meta Group, Inc. in Stamford, Conn. The premium for Skyline would increase to 68% if the ES/9000 were covered under IBM's multiple-system discount, which lowers the software price on that machine to $88,500 per month.

With non-IBM products accounting for more than 50% of the software spending at a typical mainframe shop, the IBM increases could be only the beginning, according in Michael Egan, an analyst at Meta Group. "The real rat's nest is going to be what some of the [other vendors] do," he said.

On the other hand, Egan said a full 780 MIPS Skyline offers nearly two-thirds more processing power than the top-of-the-line ES/9000, which peaks at 468 MIPS. The IBM software would actually be up to 28% less expensive on the Skyline than on a combination of ES/9000s that matched its throughput, he said.

Some good, some bad

Expected impact of IBM's software pricing model on Hitachi's Skyline systems

Pros	Cons
MVS and other software will cost less on Skyline than on an equivalent pair of ES/9000-class machines	Skyline software pricing will be more expensive than any other single high-end mainframe
Pricing is based on IBM's parallel Sysplex curve, which discounts rates as processor capacity increases	Customers will not be able to aggregate the capacity of multiple Skylines to qualify for bigger discounts

Source: Industry analysts

Heavy consideration

Potential Skyline buyers said software cost is one of the top factors they will weigh in evaluating the Hitachi behemoths, which are based on a 124 MIPS processor. The ES/9000 line and compatible systems from Hitachi and Amdahl Corp. use 62 MIPS engines [CW, April 10].

"What that delta [between current systems and Skyline] is going to cost us is definitely an issue," said Al Alioto, director of resource management at Kaiser Permanente Health Plan, Inc.'s Northern California data center in Walnut Creek.

The facility plans in expand its mainframe processing capacity in the first half of next year, Alioto said. It expects in weigh a Skyline purchase against upgrading an installed seven-processor ES/9000 to the largest 10-CPU configuration, he said.

Software pricing is a large part of the cost of ownership equation, agreed Mike Maggs, vice president of technology at Bell Sygma, Inc. in Toronto, the information systems and outsourcing arm of Bell Canada, Inc. Bell Sygma pays about $1.5 million annually in software costs for each of its three MVS mainframes, he said.

The company is in the midst of evaluating Skyline against an ES/9000 upgrade or a high-end Amdahl system, Maggs said. Skyline "may increase the software price somewhat but not as much as buying two separate [ES/9000-class] engines" to get equivalent performance, he added.

IBM's software pricing previously was the same on all System/390 machines rated at 217 MIPS and above. However, it created a new pricing model for Skyline that increases with the number of processors, although the rise is relatively gradual compared with IBM's traditional pricing tiers.

IBM's Skyline pricing "is not terribly onerous [for Hitachi], but it is kind of onerous," said Charlie Burns, an analyst at Gartner Group, Inc. in Stamford, Conn. However, Skyline's performance advantages made grouping it with existing high-end machines unfeasible from a competitive standpoint, Burns added.

Security demands fuel growing industry

Bank turns to third-party expert system to combat skyrocketing credit-card fraud

By Thomas Hoffman

While most top-tier U.S. banks have been applying neural network technologies to stop credit-card fraud, Canada Trust has tried a somewhat different approach: an expert system.

The $163 billion savings and loan used Trinzic Corp.'s knowledge-based Aion Development System to develop an expert system with more than 250 rules that calculate and analyze credit-card transaction patterns.

The system has worked. Since the expert system went into production in July 1993, Canada Trust has eliminated its use of reports from MasterCard International, Inc. More important, the bank has saved more than $1.2 million in MasterCard losses since the software was installed.

Canada Trust has installed an expert system to detect credit-card fraud. Since the software was installed in 1993, the bank has saved more than $1.2 million in MasterCard losses.

Out of control

Credit-card fraud is rampant, and the losses continue to spiral. MasterCard issuers reported more than $450 billion in worldwide losses in 1993 — the last full year statistics were available — and the numbers continue to climb.

"It's still a very serious problem, and the numbers aren't going down," said David Medeiros, an analyst at The Tower Group, a Wellesley, Mass., banking and technology consultancy.

To combat this, Canada Trust uses Cobol and SAS Institute, Inc. software to extract data from its IBM ES/9000 mainframe-based credit-card authorization records. Data is extracted every two hours during the business day and once nightly.

The Trinzic-based expert system then automates the search for deviations from a customer's profile, such as big-ticket purchases outside the customer's normal purchasing patterns and transactions such as cash advances or jewelry or electronic purchases, which are frequent targets of fraud.

The expert system then assigns an overall score to a transaction incident based on the likelihood of fraud and routes the data to the bank's fraud department for analysis. For example, the system identified a Canada Trust MasterCard customer who had not used his credit card for three months but whose account suddenly showed a large jewelry purchase. The purchase turned out to be fraudulent.

The old way

Prior to the development of the expert system, Canada Trust relied on "velocity reports," or credit-card usage reports, from MasterCard to analyze suspected fraudulent activity. But the data was two to three days old before Canada Trust fraud experts could begin analyzing it, and the bank wanted to be able to detect fraudulent activity before customer statements were produced, according to Paul Martinello, audit information analyst at the bank's London, Ontario, office.

Long shot

Consumer credit-card fraud is very difficult to detect with any certainty, even when using the most advanced techniques on card transaction data. At best, the most effective neural network models cannot provide more than a 25% to 33% certainty of actual fraud, according to David Medeiros, an analyst at The Tower Group, a Wellesley, Mass., consultancy.

Canada Trust spent $9,000 for IBM OS/2-based versions of AionDS and approximately $45,000 for the IBM MVS component. The bank received a return on investment after half a month of using the software, Martinello said.

According to MasterCard figures, credit-card fraud in Canada rose 46.4% in 1993. Although there are no fail-safe credit-card fraud detection technologies on the market, Canada Trust's expert system has helped the bank reduce its credit-card fraud to an annual rate of less than 25%, Martinello said. "We can't cover everything, but we're running well below industry average," he added.

Association's membership swells as tide of concern rises

By Gary H. Anthes
CARLISLE PA

On a narrow back street behind a drab storefront in this sleepy town lies an organization that is beginning to make waves in the information security community.

The National Computer Security Association (NCSA), which had a staff of 10 people in January, now employs 20 and expects to double its size again by the end of the year. "Six months ago, we didn't need titles or organization charts," said executive director Robert Bales. "Now we do."

Indeed, at a time when many associations report flagging membership, the NCSA seems to be on a roll. The association had 50 members in 1990; it currently has 2,000 and expects 10,000 by the end of next year. In addition, in the past six months, 25,000 subscribers have tuned in to its CompuServe forum, which allows association members and other users to exchange information on dozens of security issues.

A lot going on

Several forces have converged to put the NCSA on computer professionals' radar screens. "Trade publications and others are publishing stories on security," said Peter S. Tippett, the NCSA's new president. "Security is becoming a mainstream issue."

Hot spot

In the past six months, 25,000 people have visited the NCSA's CompuServe forum. To get there, type "GO NCSA."

Information security risks are increasing for several reasons, Tippett said: PCs are becoming more widely networked and therefore more exposed to intrusion from outside; corporations are opening their networks to the Internet, and more people are turning to electronic commerce.

"And [systems] are so complex, no one can comprehend the complexity," Tippett said. "It can be proved that as complexity increases, security risks increase even faster."

Meanwhile, there are more bad guys, and they are getting more organized and more sophisticated at their craft, often employing automated network cracking tools, Tippett said.

Wider focus

Driven by these forces, the 6-year-old NCSA — which at one time dealt mostly with computer virus prevention and detection — has begun to diversify and offer services such as surveillance of the computer underground (see story below), product testing and certification, training and publishing.

NCSA President Peter S. Tippett: *"As complexity increases, security risks increase even faster"*

"They are definitely on the move," said an information systems manager at a large insurance company. "We use them a lot for information contacts and referrals and product recommendations."

The IS manager said he was especially impressed with the NCSA's recent hiring of Richard Ford, former editor of the "Virus Bulletin," as director of research. "He's very knowledgeable. I'm impressed," he said.

The NCSA's software laboratory now tests and certifies antivirus products from 17 vendors. The association is expanding that concept through a consortium of Internet security product developers to include the testing of products such as firewalls and browsers. The consortium will serve as a forum for conveying end users' security requirements to vendors, Tippett said.

'net stalkers

The NCSA recently launched its Underground Reconnaissance service, through which NCSA staff cruise Internet bulletin boards and other hacker hangouts looking for information about computer threats and vulnerabilities.

"To do this, we have to be 'net snoops.' We have to masquerade," said NCSA executive director Robert Bales. "We pretend to be hackers."

Bales said the NCSA has three staffers devoted to this activity full-time in addition to several people on the outside who do underground work for their companies and share the results with the NCSA.

One such person is Frank Tirado, IS security manager at the Economic Research Service at the U.S. Department of Agriculture. "I've been on virus and hacker bulletin boards for three years," he said. "I keep [the NCSA] informed of the stuff I find on the underground, and they can disseminate it to other people.

"They have come a long way from their humble beginnings. There is such a lack of security awareness, and they are doing a tremendous job of spreading the message."

Bales said the association collects 70M bytes of information a month gleaned from underground sources including magazines, Internet newsgroups and list servers, hacker bulletin boards, government agencies and other security organizations. The information is indexed and put on-line for access by subscribers. It is also saved on CD-ROM.

The Underground Reconnaissance service costs $4,800 per year and currently has seven subscribers, Bales said.

—Gary H. Anthes

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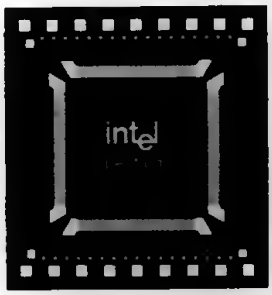

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Harold Lorin

Same as it ever was

After a decade of "distributed," "client/server," "open" and "network-oriented" computing, has the information technology bureaucracy learned something? Is it more prepared to nurture the use of technology to support profitability, flexibility, efficiency and aggressiveness in the enterprise? Or is it still fixated on using DASD, creating content-free architectures and protecting obsolete equipment and programs, as it was when the 3390 and MVS were the glories of their time?

The unhappy report is that where practices are unsavory, they are as unsavory as they have always been. The more things change, the more they stay the same. By and large, the heart of the beast is as it was. Information technology remains insensitive to benefits, as opposed to costs, and lacks formal procedures for quantifying per-user

benefits. It also lacks wholesome processes for assessing costs and the type of methods for assessing investment and commitment risks that might constitute the "due diligence" a company should expect.

The budgets, although stressed by arbitrary ad hoc cuts, are effectively out of control. There are levels of waste and built-in fat that come from continued basic misunderstandings about what is worth managing, what is manageable and what costs more to manage than to leave alone.

Enormous sums are spent on enterprise architectures that have little or no effect on development projects or technology acquisitions because they do not properly define components in a way that might guide or constrain investment. By and large, information technology leaders are not sufficiently technical to recognize or assess the levels of sophistication of their staffs and the degree to which technical staff understand best-industry practices. Lacking that understanding, they are unable to properly discipline and guide the budget.

Many have been busy being "proactive" in the business, leaving no one to watch the multimillion-dollar technology investments that still appear to businessmen as barriers, not facilitators, to strategic opportunity.

The technical staff has been little changed by a decade of presentations about "integration," "open computing" and "interoperability." The concept of "do it now" prevails as strongly as ever at the expense of "do it right."

Decisions are made about security, recovery, objects and storage management without regard to the overarching systems management frameworks in which these functions must exist and coexist. The dysfunctional compartments of 1970s industry are still largely in place.

There has been little patient investment in the integrated CASE environments that have maximum payback but that are hard to introduce into the culture. Those moves require long payback periods before providing the reuse that pays the bills.

Unhappily, the members of information technology know either too much or too little about information technology. Some are unable to see the trees, and others unable to see the forest.

Of course, there are organizations whose information technology structures and processes have matured, and there have been dramatic incidents of "getting it right." Those leading organizations have moved to new technologies at the proper time and on a proper cost curve. However, billions of dollars remain under the control of staffs for whom time has not changed. They have the technological and organizational attitudes of a decade ago, and their mismanagement of this resource is a disservice to their companies and stockholders.

Lorin is an author, principal consultant at the Manticore Consultancy in New York and senior adjunct professor at Hofstra University.

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*"UNIX Products: An Analyst's Scorecard" November 7, 1994. Illuminata.
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In search of 100% uptime

By Neal Weinberg

The residential voice-mail system that Ray Kelchner manages for Pacific Bell Information Services runs at 99.7% to 99.8% efficiency.

But Kelchner is not a happy man.

"Our objective is to be up 100% of the time," Kelchner said. Being extremely close is "not good enough."

Kelchner, director of technical support for the voice-mail service, manages two identical systems covering Northern and Southern California.

That is a total of 500,000 mailboxes and an average of 2.75 million calls a day. That spells mainframe.

Kelchner looked at all the major vendors when the service was initiated in 1990. He selected Unisys Corp. for its mainframe technology and level of service and support.

The relationship has had its ups and downs during the years, but Kelchner is basically satisfied with his decision to go mainframe and with his choice of Unisys.

He said he likes the fact that Unisys service people are stationed at the Alhambra and Pleasant Hills, Calif., locations. And the mainframe's ability to accept and store vast amounts of data is precisely what is needed for this type of system, Kelchner said.

But the tough taskmaster has some bones to pick with his vendor. He said he replaced his original Unisys A17 mainframes last June because he was running out of capacity, and he wanted even more reliability.

The new A18 models have a capacity of 320,000 mailboxes each, so Kelchner has allowed plenty of room for customer growth. And he bought a three-processor system, with two processors running and one as a spare.

He said he wants Unisys to develop better recovery tools so that he can be back up in 15 minutes or less if problems should occur. Kelchner also said he does not like the fact that he is required to take the system down to install new software releases.

And occasionally an application will simply stop running, Kelchner said.

But Kelchner said that despite his complaints, he is generally satisfied with the way things are unfolding and that Unisys is responding to his concerns.

In fact, Kelchner is one of the few Californians who lacks a systems horror story from Jan. 17, 1994, the day a powerful earthquake hit the area, killing 61 people and causing $20 billion in damage. His operation never missed a ring. The Southern California service hit an all-time record 1 million calls, and it has not dropped below that figure since.

The service has grown to 1.3 million calls a day in the northern part of the state and 1.4 million to 1.5 million calls a day in the southern part.

The storage of voice messages requires massive amounts of capacity that can be provided only by a mainframe, said Brian Jeffrey, an industry analyst at International Technology Group in Mountain View, Calif. And the Unisys solution, which includes its specialized network application platform software, is "going like gangbusters," Jeffrey said.

On Site

Pacific Bell Information Services
Alhambra, Calif.

Challenge: To build a voice mailbox system that can accept and store millions of calls a day.

Strategy: Select an experienced mainframe company for storage capacity and reliability, maintenance and service.

Choice: Unisys' A18 model mainframe.

Briefs

Serving subscribers

Datapro Information Services Group in Delran, N.J., last week announced a CD-ROM information service that will provide subscribers with results of laboratory tests on various information technologies conducted by National Software Testing Laboratories. Updated monthly, the service costs $895. Subscribers will also have access to Datapro's product and technology overviews, including summaries of specific technologies, markets, vendors and products.

Tandem boosts support

Tandem Computers, Inc. in Cupertino, Calif., announced it will support both Micro Focus, Inc.'s CICS Option and Novell, Inc.'s Tuxedo transaction processing monitors on its Integrity FT fault-tolerant Unix servers starting in the second quarter of this year.

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Storage Dimensions, Inc. has announced MegaFlex, a four-bay, fault-tolerant enclosure incorporating 5¼-in. disk and tape drives.

MegaFlex was designed for large capacity applications with high-density data in a multiple host and operating systems environment.

According to the Milpitas, Calif., company, MegaFlex's modular design accommodates growth in 9G-byte increments (36G bytes per enclosure) and allows uninterrupted access to information through redundant, hot-swappable hardware components. It was designed with rugged drive and tape modules and dual redundant load-sharing power supplies, dual main power inputs with cable lock guards and three fan-cooling modules.

Pricing for MegaFlex starts at $9,330.

▶ *Storage Dimensions*
(408) 954-0710

UniKix Technologies has announced UniKix 4.1, a CICS transaction processing monitor for Unix platforms.

According to the Billerica, Mass., company, UniKix 4.1 provides a full set of application services needed to build integrated application systems across a heterogeneous distributed network of mainframes and Unix systems. It also includes an external presentation interface with extended capabilities for connecting CICS applications to outside devices and applications.

UniKix is available for platforms from AT&T Corp., Bull HN Information Systems, Inc., Data General Corp., Hewlett-Packard Co., Pyramid Technology Corp., Sequent Computer Systems, Inc. and Sun Microsystems, Inc. as well as the IBM RS/6000 and Unisys Corp.'s Unix.

UniKix 4.1 is priced according to the number of concurrent users. Pricing starts at $1,000 per user.

▶ *UniKix Technologies*
(508) 663-4176

Axent Technologies has released OmniGuard/Enterprise Access Control for Unix (OmniGuard/EAC), security management for large-scale open systems environments.

According to the Rockville, Md., company, OmniGuard/EAC helps defend open systems environments against unauthorized access by internal users or external users on public networks. It gives security administrators control over user accounts and system access rights and passwords. It also has a graphical user interface for creating a profile of each authorized user and group.

OmniGuard/EAC generates audit logs of security events to track security activity, account access and attempted break-ins.

OmniGuard/EAC conforms to open systems standards and is available for Sun Microsystems, Inc.'s SunOS and Solaris, Hewlett-Packard Co.'s HP-UX and IBM's AIX operating systems.

Pricing begins at $395 per workstation.

▶ *Axent Technologies*
(301) 258-2620

American Digital Systems, Inc. has introduced RPS (Redundant Power Systems), a system for strengthening the power supply in disk subsystems. RPS supports each disk in a subsystem with its own dedicated power supply.

According to the Sudbury, Mass., company, the combination of multiple power supplies with inherently reliable disk drives achieves high fault-tolerance levels without the expense of RAID implementation. A redundant power supply is also provided to take over if one of the dedicated power supplies fails.

RPS is available in a four-disk system bundle starting at $2,995. Components are also available separately.

▶ *American Digital Systems*
(508) 443-7711

WizSoft, Inc. has released WizRule for Windows, a database auditing tool.

WizRule directly reads Borland International, Inc.'s dBase and Paradox, Microsoft Corp.'s FoxPro and Computor Associates International, Inc.'s Clipper and can indirectly read most Open Database Connectivity-compliant databases.

According to the Framingham, Mass., company, WizRule reads the contents of a database and discovers its rules and errors without prior rule instruction. From this reading, it produces a report listing the database's statistical rules and deviations.

WizRule for Windows costs $495.

▶ *WizSoft*
(508) 620-4554

Acorn Software, Inc. has joined with Pioneer Electronics Corp. to announce VirtualBranches, data storage and retrieval for Digital Equipment Corp.'s OpenVMS environment.

According to the Acton, Mass., company, VirtualBranches brings plug-and-play convenience to large volumes of data storage and retrieval. Users can view a CD-ROM library as multiple virtual volumes on-line. It is also accessible as clusterwide mounted disk volumes.

Pricing for VirtualBranches systems start at $2,445 for a six-disk library and $3,740 for an 18-disk library.

▶ *Acorn Software*
(508) 568-1616

Herotx Corp. has introduced RoboMon Investigator, a problem troubleshooter and resource manager for multiple Unix systems.

According to the Newton, Mass., company, RoboMon Investigator can collect 200 statistics directly from a Unix system and organize them into summary files. These files are then scanned for overly large files, storage allocation issues, file systems not mounted or running out of space, zombie processes, excessive network traffic and missing critical processes. An administrator views this information through an Open Software Foundation Motif-based graphical user interface.

Systems administrators can use RoboMon Investigator to view and manage a Unix system or a system subset. Users can control and process their own files.

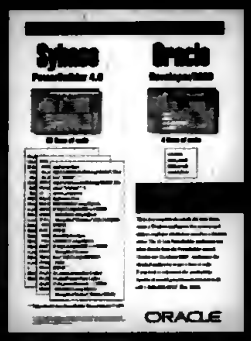
RoboMon Investigator is available on the following Unix platforms: IBM's AIX, Digital Equipment Corp.'s Digital Unix, Hewlett-Packard Co.'s HP-UX and Sun Microsystems, Inc.'s SunOS and Solaris.

Pricing for RoboMon Investigator begins at $395.

▶ *Herotx*
(617) 527-1550

Product short

EMC Corp. has released the Harmonix HX3SR RAID storage subsystem with 2G- and 4G-byte drives and new microcode. Cost: $32,800 to $72,500, depending on configuration. EMC Corp., Hopkinton, Mass. (508) 435-1000.



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Skills assessment software

Packages help managers figure out who can do what

By Julia King

Just as many large companies have lost track of how many and what kind of PCs they own, they are also in the dark about who knows what in their informatioo systems organizations.

As a result, managers say, companies are hiring employees with skills that are redundant- with those of existing staffers.

The lack of necessary informatioo has also made assembling project teams costly and time-coosuming. Moreover, employees are often being trained with little regard for how their new skills will be put to use in their companies.

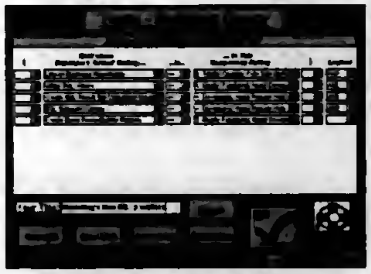
Take Continental Insurance Corp. in Neptune, N.J. Uotil about 18 mooths ago, the company required all 700 of its IS staffers to take 10 days of training anoually.

"But we were filling the requirements without knowing if the training was actually being used on the job," said Barbara Strugala, assistant vice president of information technology.

Today, by cootrast, Continental Insurance provides just-in-time training as projects come up. The company also oow has concrete information on which IS skills it will require a year from oow and what kind of training it oeeds to provide to bring employees up to speed on those skills.

Meanwhile, at a large Wall Street financial services company, it oow takes days rather than weeks to organize the company's 800 IS staffers into project teams.

What has made the difference at both firms are automated skills asset management systems, which more and more large companies are implementing to cut costs and keep closer tabs on ever-shifting IS skills requirements and resources.



SkillView's skills assessment software *helps IS managers keep a track of their staffs' capabilities and training*

"At an average cost of $60,000 per person per year, every IS organization has a massive annual labor line item oo their budget, yet it just hasn't been managed with any rigor," said Hank Riehl, presideot of SkillView Technologies, Inc. in Hampstead, N.H.

In addition to SkillView, companies with systems on the market include Bensu, Inc. in San Francisco and People Sciences, Inc. in Maplewood, N.J.

All three companies offer standaloe PC-based software as well as client/server-based versions.

Northrop Grumman Corp.'s Data Systems and Services Divi-

Skills, *page 98*

> Human resource organizations "typically don't understand technical skill requirements. They think bridges and routers are something you drive over that C++ is something teachers give out and that Unix are employees of a harem."
>
> Howard Cook
> Northrop Grumman Corp.

Network info gains guaranteed delivery

By Elizabeth Heichler

Object ORIENTED

Thanks to a new kind of software just beginning to emerge, companies will be able to take advantage of both higher-performing systems and easier applicatioo programming.

One of the first of this new breed made its debut last week wheo Teknekron Software Systems, Inc. ooveiled a module that rides oo top of its Teknekroo Information Bus communications software. This module, called the Transactioo Express, guarantees that informatioo seot over the network arrives where it is oeeded.

Teknekron is taking a new approach to the problem known as transaction processing. Its software is based oo communications software rather than database software.

The usual way

Correotly, most systems guarantee that updates to databases are correct and eomplete through the ose of a transaction-processing monitor. This monitor observes each update, or transaction, and permits the opdate to the database to be finalized. Monitors that observe the transaction from both the originating side and the destinatioo side — and do not permit the transaction to be finalized until all appears to have gone prop-

Network info, *page 97*

> **Catching the Teknekron Bus**
>
> The Teknekron Information Bus is messaging middleware that allows information to be passed around distributed enterprise via TCP/IP networks.
>
> The bus is based on a publish-and-subscribe architecture. This means applications need not be aware of the network to be able to send or retrieve information. Data objects are labeled with descriptions of their subject and can be automatically retrieved by users who "subscribe" to that subject.

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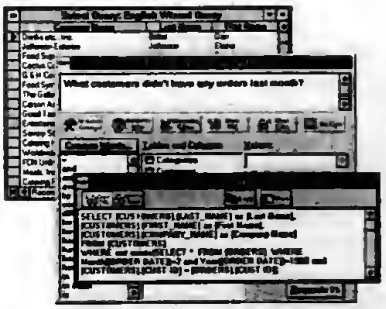

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SAS Institute's customers keep the faith

By Rosemary Cafasso

When it comes to the mainstream application development market, SAS Institute, Inc. is probably not on many users' radar screens.

But for many SAS customers, the Cary, N.C., company is providing the tools they need.

In some cases, SAS customers do not even seriously review other development tools because SAS's offerings match their requirements. The tools integrate well with other SAS products and, by selecting them, the users keep the number of vendors they work with to a minimum.

Choosing SAS application development tools "was just automatic because we knew we could do it in SAS," said Michael Durbin, an information systems supervisor at Purina Mills, Inc. in St. Louis. "Having been on the Internet and watched people go back and forth on PowerBuilder and Visual Basic, it seems like SAS may be a little harder to use but a tot more flexible."

SAS applications development tool set

Requirement	The base SAS system
Options	• SAS/Application Facility, a client/server development tool • SAS/EIS, assembles an executive information system • SAS/Assist, creates point-and-click data access • SAS/Access, interfaces to a variety of non-SAS databases
Platforms supported	40 platforms, including multiple Unix flavors, IBM mainframe, Windows and Macintosh
Standards supported	Microsoft's Open Database Connectivity and OLE
Price	Starts at $985 per user. A fully loaded application development package starts at $1,575 per seat for a 10-user configuration.

Full tool box

SAS, a 20-year-old software company that got its start in mainframe statistical software, provides a set of application development tools to create end-user and data access applications (see chart). Users need to purchase the base SAS system, which is not a full database management system but provides data management and a data manipulation function.

Customers can then add a number of tools to build applications for SAS. These include the company's core development tool, SAS/Application Facility (SAS/AF), which can build graphical user interface-based front-end programs for data access as well as full-scale client/server systems with pieces of an application partitioned and running on different processors.

Of the $482 million in revenue SAS made last year, about 23% came from application development tools sales, said Wink Swain, general manager of new market development at SAS. About 80% of these sales came from its installed base, with the remaining 20% generated from new customers, Swain added.

SAS has about 29,000 customer sites and 3 million users.

Diane Brown, director of clinical systems at Athena of North America, Inc. in Indianapolis, said her staff selected SAS/AF because "we wanted to stay with a company that could provide all the tools."

Brown's team is using SAS/AF to create decision-support applications that will access a SAS-based data warehouse. "We didn't really analyze other tools at the time," Brown said. "We are so familiar with SAS."

Durbin said Purina Mills is also using SAS's development tools to build data warehouse applications. With SAS/AF, Durbin created a menu-driven system for ad hoc reporting in "about a month and a half."

From host to client/server

Tony Picardi, an analyst at International Data Corp. in Framingham, Mass., said SAS's tool set fits well with many users who are moving their SAS environments from primarily host-based systems to more graphical client/server platforms. As a result, they need tools to design front-end, graphical-based applications to work with the SAS data.

"You never hear of [a leading company such as] Powersoft saying that SAS is one of their competitors," Picardi said. Yet, if all SAS did was sell to its installed base, "they would still have a very nice business," he added.

SAS graded well

In its recently released evaluation of more than a dozen application development and fourth-generation language tools, Ovum Ltd. gave the SAS system overall good marks. The London-based research house found SAS's application development tools to be average or above average in areas such as supported operating systems, data access services and application partitioning functionality.

Ovum said one weak spot in the SAS tool kit was its change cycle support, which Ovum defined as the development phase that includes editing, debugging, testing, versioning and change management.

Systems bring Toronto's disabled patrons better transit service

By Thomas Hoffman

Mass transit can be a challenging mode of travel for many urbanites, but it can be particularly vexing for handicapped people. However, the city of Toronto's 30,000-plus disabled residents should have an easier time of it thanks to a new $7 million scheduling and dispatch system recently developed by the Toronto Transit Commission (TTC).

Before the system was rolled out in January, Toronto's disabled residents had to call the TTC four days in advance to reserve a ride on a bus or a shared taxi. Then would-be passengers had to call back the day before the scheduled ride to confirm its estimated time of arrival.

But with 5,000 daily trips to manage on its outdated scheduling system, the TTC was forced to reject 25% to 30% of its would-be passengers the day before their scheduled departure.

Using the new system, called the Wheel Trans Info System (WTIS), the TTC can guarantee rides for up to 6,000 passengers the day before their planned trip within a 30-minute window of arrival or departure. And the TTC has reduced its rejection rate to 5%.

The TTC developed WTIS with Computer Associates International, Inc.'s CA-OpenRoad and CA-Ingres relational database management software.

The WTIS server software runs on two Hewlett-Packard Co. HP 9000 Unix servers, and the client graphical user interface processing is done on six smaller HP 9000 machines.

Automation savings

By automating its scheduling functions, the TTC was able to reduce its scheduling staff from 29 to 19, resulting in an additional $500,000 in staff savings.

By creating 30-minute scheduling windows for its passengers, "we can get more productivity and efficiencies by squeezing in other customers for pickups and drop-offs," said George Procunier, a data administrator at the TTC.

Less taxi use

The TTC used to provide most of its ambulatory patrons — such as elderly people who walk with canes — with taxi service because its 130 handicapped-accessible buses were being used solely for passengers who use wheelchairs. But many of the bus seats were being left vacant, and the TTC was swallowing the incremental costs of the taxi service.

Toronto Transit's *George Procunier (far left) and Agnes Csorsz (second from right) say the system saves money and aids disabled passengers*

With the new scheduling system in place, the TTC — which derives 67% of its $600 million-plus in revenue from its fare boxes — now fills up its bus seats first and maximizes its fixed costs, Procunier said.

The TTC also implemented a Computer Talk, Inc. interactive voice telephone system in November 1994 to handle approximately 3,000 calls per day. The voice-response system provides prospective riders with more precise arrival times.

"Calling four days in advance and not knowing if you had a ride for another three days made senior citizens anxious," Procunier said.

Based on the TTC's first-quarter scheduling figures, the agency expects to be able to carry 200,000 more disabled passengers this year at no additional cost. This represents a $4 million to $6 million savings to the TTC, according to Agnes Csorsz, WTIS project manager for the TTC.

Per-passenger costs

In 1994, it cost the TTC $40 per passenger carried, based on fuel costs, driver salaries and other related overhead. After three months of using the WTIS system, the TTC reduced those costs to $29 per person, Csorsz said.

Giro, a Montreal-based consultancy, was hired by the TTC for $800,000 to develop a scheduling algorithm used with the system. Further refinements to the system are planned during the next 18 months, including the introduction of electronic connections to the major taxi companies with which the TTC contracts. The electronic gateways, which should be installed by early next year, would enable the TTC to send taxi companies electronic, rather than printed, passenger pickup schedules.

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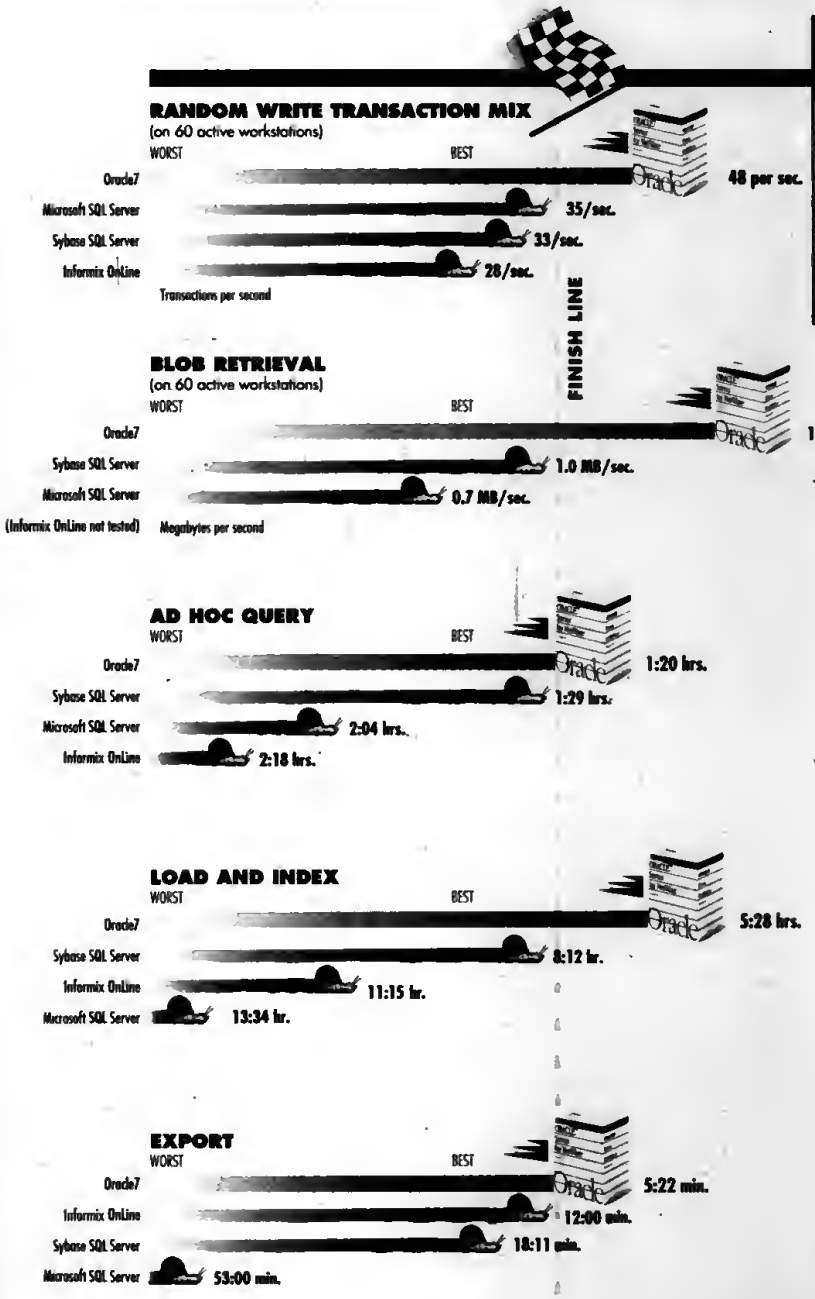

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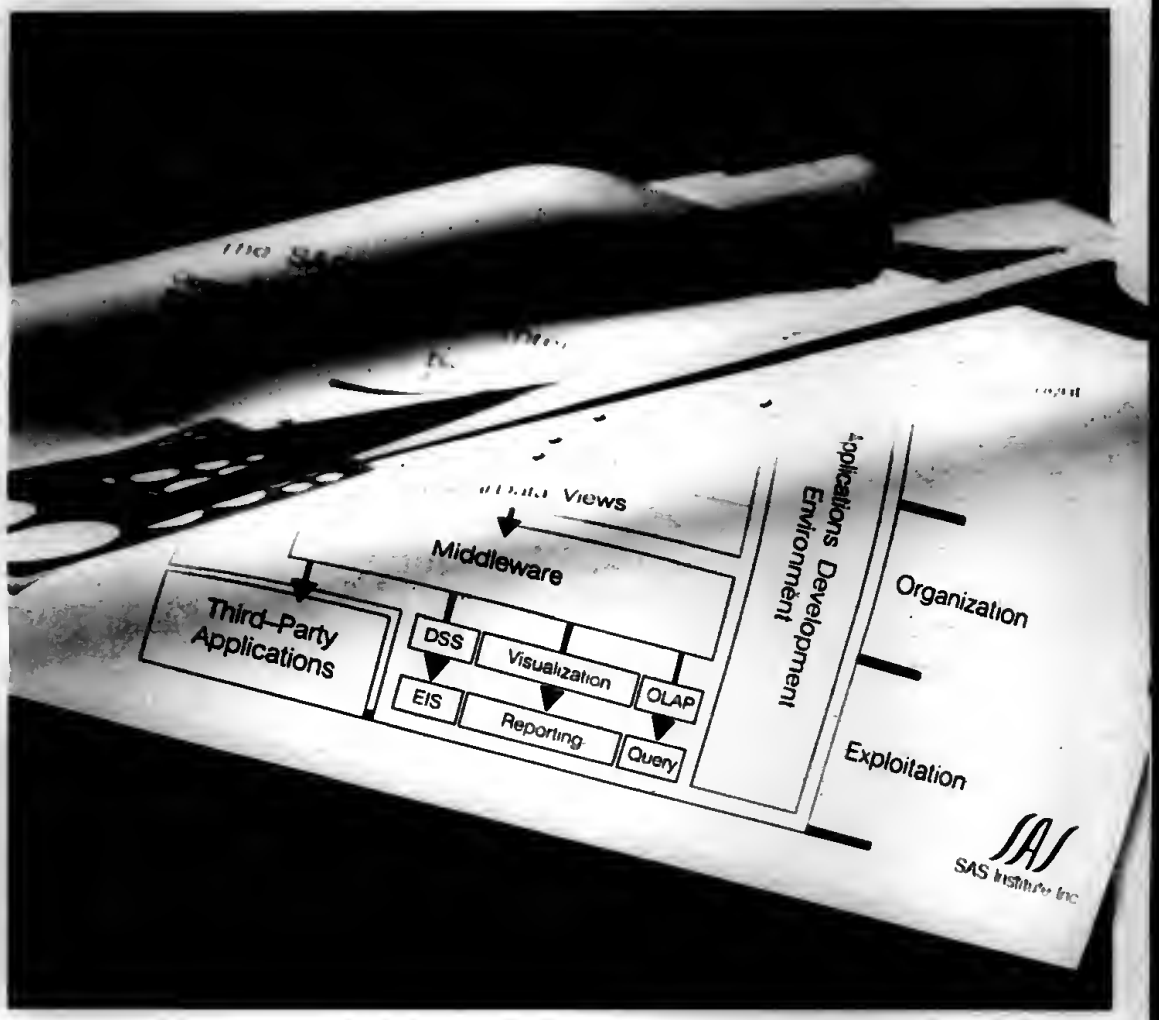

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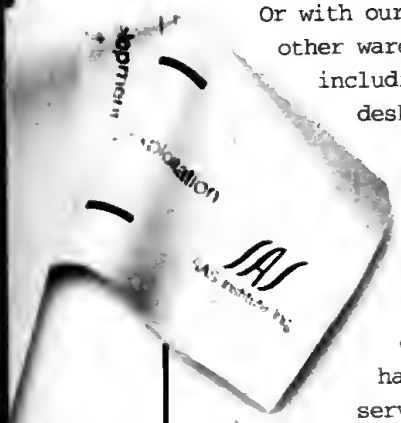

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CLIENT/SERVER
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The Magazine

Client/server. Where's it at in the real world? You'll find out in a special June 15 edition of Computerworld Client/Server Journal. With the expertise of Cambridge Technology Partners, a world renowned client/server consultancy, we surveyed more than 250 North American organizations to gauge their client/server prowess. Our special issue will list the 20 most effective users of client/server technology by measuring their:

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Network info

CONTINUED FROM PAGE 91

erly oo both sides — use a popular technology called two-phase commit.

Two-phase commit causes delays wheo transactions between two systems fail to complete. This causes all records to be locked on one of the systems, explained John Mann, research director for client/server computing at The Yankee Group in Boston.

"This is a much more efficient model for transaction processing than two-phase commit, and I think this is the way the industry is going," Mann said.

> "There's been a lot of talk about this, but nobody's really gotten their act together" except for Teknekron
>
> – Geoff Ooubleday, Nomura International

The Teknekron software comprises an architecture called TP-TIB. The first TP-TIB module, Transaction Express, extends the Teknekron Information Bus with support for asynchronous communications, providing throughput of up to 100 messages per secood, the firm said. The Transaction Express Node server sits between the data puhlisher and data subscriber on a network and guarantees delivery of a message even if client applicatioos are unavailable.

Transaction Express resulted from requests by a Teknekron customer — securities firm Nomura International PLC in Loodon. Nomura was looking for an additioonl piece of infrastructure to pass data with guaranteed delivery between front, middle and back offices located around the world, according to Geoff Douhleday, Nomura's managing director for information technology.

Nomnra is implementing a distributed trading system using Sun Microsystems, Inc. SPARC workstations and servers and is huilding applications that use Teknekron's messaging technology. The new trading system will replace an IBM mainframe-based system. It is scheduled to go into production late this year, with the mainframe slated for shutdown next March, Douhleday said.

"The elegance of [TP-TIB] is that it's scalahle," Doubleday said. He characterized TP-TIB as "far more than just a TP monitor." He added that be expects all transaction-processing systems to use a similar model in the future. "There's been a lot of talk about this, hut nobody's really gotten their act together in terms of marketable products" except for Teknekron, Douhleday said.

Teknekron's technology is compatible with Object Management Group (OMG) standards such as Common Object Request Broker Architecture (CORBA), and it uses a CORBA-compliant object request hroker on top of its messaging hus. By year's end, the new product will fully comply with a standard for object services recently defined by the OMG, according to Kieran Harty, manager of Teknekron's advanced technology group.

The advantage of using CORBA's interface for transaction-processing services is that it gives users portability of transaction-processing monitors and makes it easier to distribute applications, OMG President Chris Stone said.

IBM is moving in a similar technical direction, confirmed Ed Cobb, senior technical staff member at IBM's Santa Teresa Laboratory in San Jose, Calif. "I believe transaction processing and object technology come together very nicely, with object technology providing an easier way to huild applications," Cobb said.

IBM participated in defining the OMG's transaction-processing service and later this year "will be rolling out the beginnings of that technology" in System Object Model for OS/2 and AIX, Cobb said. There are also plans to do the same for the AS/400 and MVS, he added.

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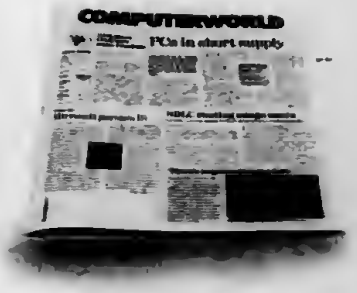

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The Newspaper of IS

[redacted]

Sales Vision, Inc. recently introduced Sales Vision Framework 1.1, a sales and marketing application development tool for PowerBuilder. Framework 1.1 features a vertical framework of object library templates.

According to the Charlotte, N.C., company, Framework 1.1's vertical library of templates provides reusable data and manipulation tools. These features let developers create prototypes quickly from prefabricated components without eroding the software architecture.

Framework 1.1 features working sales and marketing models, integrated activity management, a customizable softcopy data model and PowerBuilder source code for all objects. PowerBuilder is from Sybase, Inc. subsidiary Powersoft.

Pricing starts at $25,000.

▶ *Sales Vision*
(704) 549-0609

Logic Works, Inc. has announced ERwin/ERX for SQL Windows, a database design tool.

According to the Princeton, N.J., company, ERwin/ERX for SQL Windows lets developers create graphical entity-relationship diagrams of data. It also lets them specify SQL Windows extended attributes (class style, client-side validation, initial value) indicating how column values should be edited as well as server-side values (data type, column name, server-side validation) that describe attributes in the data model.

ERwin/ERX for SQL Windows features a repository for SQL Windows extended attributes, ERwin Quickstyles, domains, database migration and platform independence.

ERwin for SQL Windows costs $3,495.

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Skills

CONTINUED FROM PAGE 91

sion uses Bensu's system to track not only what skills its staffers have but which ones the company needs as it steadily moves forward with distributed technologies. All that information is entered into an Oracle Corp. database, which the Bensu system analyzes to identify gaps.

Using the system, IS managers can quickly locate people with the skills they require as well as develop the right training programs.

"As we flatten the organization, we have managers responsible for between 25 and 30 people, all of whom are geographically dispersed. This works as an on-line management tool to quickly find the people with the right skills," said Howard Cook, manager of skills and training.

In addition to defining skills needed for individual positions, skills inventory systems also function as performance assessment and career development tools for individual IS staffers.

The People Sciences system, for instance, gives staffers on-line access to managers' assessments of their skills, plus a list of which of the 150 core competencies are necessary to move into other IS jobs. The system also provides training information, including on-line course registration and a summary of job postings and descriptions.

One point on which experts disagree is where IS skills management systems should fit within the company.

Barbara Noti, an analyst at Meta Group, Inc. in Stamford, Conn., said they may best fit under an enterprisewide human resources system. "Because the software looks at training, position planning and position control, there is a logic to its being part of an enterprisewide human resource system rather than a departmental system," she said.

But Cook said IS groups should maintain their own skills management systems. "The reason is because human resource organizations typically don't understand technical skill requirements," he said. "They think bridges and routers are something you drive over, that C++ is something teachers give out and that Unix are employees of a harem."

All three vendors noted that their systems could be used to track skills in other departments. However, the vast majority of installations are within IS groups.

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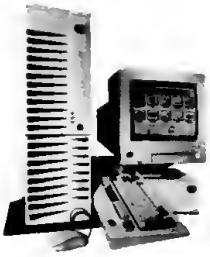

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INSIDE:
Summer executive development programs, *page 106*

If you want to align IS with your business, why not run IS like a business? Because the same market incentives that propel free enterprise can alienate line managers and users. But there are ways to overcome . . .

The Profit Center PARADOX

By Allan E. Alter

Steve Wolcoski

The price of profit center status is eternal vigilance, says Max Hopper, AMR's former CIO

ax Hopper is among the best known of all CIO-preneurs. In the past 20 years, he has gone from marketing American Airlines' Sabre reservation system to developing an information systems services business for AMR Corp., its parent company. And last year he launched AMR's IS organization, The Sabre Group, a "full-fledged profit center measured on its own revenues and earnings."

Not only has AMR gained additional revenue, but both internal and external "customers got better service and lower costs because we had to find less expensive ways to do things" to compete successfully, Hopper says.

But even in retirement, Hopper still remembers the pain. Selling IS services can inspire fear, jealousy and envy among non-IS managers. If IS had not won top management support by bringing in so much revenue, such resentment would probably have been overwhelming, he says. In fact, even though IS has been bringing home the bacon at AMR for two decades, not everyone there "totally agrees that should be done."

Those skeptical AMR executives have lots of company. The notion of operating IS as an independent business in a market economy, instead of as a centrally planned staff function budgeted as a cost center, is making little

Profit center paradox, *page 103*

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Profit center paradox

Continued from page 101

headway in the marketplace of ideas. The concept was advocated in a January 1987 Harvard Business School article by Brandt Allen, a University of Virginia business professor. Its roots are in the old practice of mainframe time-sharing.

Many companies, including Bane One Corp., Weyerhaeuser Co. and Kimberly-Clark Corp., have tried and quietly abandoned IS profit centers. Nearly all banks have ended the practice of running the IS organization as a profit center, says M. Arthur Gillis, a veteran IS banking consultant in New Orleans. Practitioners say they hear of more companies abandoning the approach than adopting it.

But is this aging fad being buried prematurely? Now that IS executives can benefit from a decade of experience with IS profit centers, can this paradigm be saved?

Pros and cons

It is hard to ignore the die-hard advocates, success stories and theoretical attractions of the IS profit center.

Proponents say not only can it earn income, but it can achieve IS/business alignment, help users understand the value of information systems and win respect for the IS organization — the same goals sought by advocates of IS governance, a new management model for IS [CW, Nov. 28, 1994]. Becoming a profit center forces IS to compete with outside vendors, negotiate competitive and comprehensible rates and develop the mind-set of a market-driven service company, advocates say.

Richard Lennon, vice president and chief information officer at Brown-Forman Corp. in Louisville, Ky., has run his IS operation since 1991 as what can be best described as a *not-for-profit* profit center. While he has no external clients, the disciplines of competing with outsourcers and competitive pricing have proved beneficial at the $1.7 billion distillery and consumer goods company, known for Jack Daniel's whiskey and Lenox crystal.

"In theory, it's beautiful. Clients make sensible purchasing decisions: They only buy stuff if it's worth it. Clients have absolute control over priorities, and IS can be innovative and entrepreneurial. Both parties can be empowered."

N. Dean Meyer,
president, N. Dean Meyer and Associates, Ridgefield, Conn.

The move to profit center status has reined in IS costs, as Lennon predicted it would when he first proposed the idea to his boss. From 1985 to 1991, Brown-Forman's IS expenses climbed an average of 11.5% a year. Since then, expenses have grown a total of $70,000 — 1% over five years, or .2% each year, Lennon says.

"The good news is we made some remarkable turnarounds in terms of the technology we used. That means both the customers and ourselves have focused much better on how we used the money. We have invested in LANs, WANs, client/server, workstations and executive information systems. We're not wanting for anything," Lennon says.

Now, "I'd never go back. I can't imagine running an IS department any differently," he says.

"In theory, it's beautiful. Clients make sensible purchasing decisions: They only buy stuff if it's worth it. Clients have absolute control over priorities, and IS can be innovative and entrepreneurial. Both parties can be empowered," says N. Dean Meyer, president of N. Dean Meyer and Associates, a consultancy in Ridgefield, Conn.

And it also beats the tar out of traditional IS financing approaches, say Lennon and John Diesem, managing director and chief operating officer at Beta Systems, Inc. in Brookfield, Wis. Beta Systems offers data processing services to financial services firms and provides internal IS services to its parent company, Kemper Securities Holdings, Inc.

According to Diesem, cost center budgeting leads non-IS managers to kill important corporatewide IS projects out of self-interest and provides IS managers no financial incentives to lower costs or move away from old technology. Diesem also says traditional chargeback measures, such as MIPS or CPU cycles, obscure the value IS delivers to users.

"If your peers are profit center managers, it's much easier to deal with them when you're making a profit yourself and running IS like a business rather than like a staff function. And when you're not, then all you are is a pesky staff person," Diesem says.

Whose side are you on?

If the IS profit center sounds so good, why have so many grown skeptical?

For starters, the concept of IS profit centers has come to mean just about anything anyone wants it to mean (see "In it for the money," above).

"Over 90% of the companies I've run across that set up IS as a profit center do not build a profit into their rates. They are still a full cost-recovery kind of environment," says Terry Quinlan, executive director of the Financial Management of Data Processing Association in San Francisco. At many of these firms, the concept has degenerated into an excuse to evade the financial responsibilities of cost centers or a buzzword to "give the perception" that IS will be more efficient and effective than before, he says.

And one CIO, who asked to remain anonymous, says his company operates its IS profit center primarily to reduce corporate taxes.

Then there's the FUD (fear, uncertainty and doubt) factor.

In it for the money?

Free market purists, beware: In the real world, many IS organizations call themselves profit centers — including many that are not allowed to make a profit. Which one your unit is depends on how you answer the following questions.

Who is the customer? Some companies, such as AMR and CBS, allow their IS organizations to seek external customers and provide them with IS services for profit. At others, such as Brown-Forman, the customer is strictly internal.

How do you charge customers? Traditional chargebacks are based on computer usage, such as CPU cycles used or lines of code written. But Kemper Securities and Brown-Forman charge a set fee per business activity, such as purchase orders processed or units manufactured.

Are you allowed to charge above cost? In the free market, companies charge whatever the market will bear; IS organizations rarely do so with internal customers. For example, before it was absorbed into BankAmerica Corp., Security Pacific Automation Co. charged only 2% to 5% above cost.

Can IS keep the profits? Some organizations, such as CBS, sell IS services at a profit only to outside companies. Others, such as AMR's The Sabre Group, provide IS services at a profit to both internal and external customers. But many, if not most, aim to break even and return any profits to their internal customers.

Source: Company officials

Non-IS managers fear the company will lose control of IS, Hopper says. They worry that their computing priorities will take second place to external customers, that the IS organization will have a different mission than the rest of the company and that IS will give away competitive know-how when they sell their services (see "No! No! No!," page 105). Non-IS peers can become jealous of the independence IS managers enjoy and envious when IS executives receive bonuses for meeting their business plan while other executives go without.

"We ran into . . . questions of allocation of resources, priorities, whether or not we should even be serving that market segment. We were under extreme scrutiny, more than normal scrutiny by the finance organization and others," Hopper says.

And when AMR expanded its IS-related businesses in the 1980s and Hopper began to hire people from outside AMR, he found he had to ameliorate a culture clash between the entrepreneurial newcomers and the old airline culture.

Sometimes, standard corporate practices get in the way.

"Oftentimes IS groups are told to compete, and then [they] have their hands tied" says

Profit center paradox, *page 105*

Profit center success factors

It takes more than determined support from your CEO to successfully run IS as a profit center.

Success is more likely if your IS organization . . .

- Is not the only former cost center to operate as a profit center.
- Develops distinctive competencies at a price competitors cannot match.
- Hires publicists and salespeople to explain the concept and make deals.
- Makes sure all internal costs are covered by its fees.
- Takes the time necessary to go up the learning and acceptance curves.
- Teaches users how and why they should operate in a profit center world.
- Sets fees and sends bills that customers can understand.
- Brings in a large, steady stream of revenue from the outside.

Jealousy and suspicion can undermine an IS profit center as surely as can misunderstanding the value of information systems.

Failure is more likely if non-IS managers believe IS is . . .

- Too busy with external customers to serve their needs.
- Profiting unfairly at their expense.
- Selling the company's intellectual assets.
- Getting beyond the company's control.
- Plunging their departments into the red with the new fee structure.
- Being rewarded differently than other departments.
- Failing to be cost-competitive with outside IS service firms.

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Profit center paradox

Continued from page 103

Richard Swanborg, a principal at Trade Winds, an IS management consultancy in Cohasset, Mass. For example, corporate policies may prevent IS from offering competitive salaries and raises or from moving out of a company-owned building to lower-priced facilities.

In addition, IS organizations that become profit centers must learn how to triumph in the marketplace.

That means they need to develop products, build a marketing force to sell them and be willing to take risks, says George F. Sekely, the recently retired president of CSX Technology, Inc. in Jacksonville, Fla., the IS subsidiary of transportation giant CSX Corp. Even so, the market for IS services can disappear as technologies change, and big competitors, such as Electronic Data Systems Corp., can make life miserable, observers say. To compete, IS organizations run as profit centers are tempted to deliver short-term solutions that shortchange their company's long-term infrastructure requirements, Swanborg says.

An experiment gone bad

Tom Lodahl, chairman of CogniTech Services Corp., an IS consultancy in Columbus, S.C., recalls one company's failed attempt to set up an IS profit center. The IS group sought external customers while charging internal customers above cost.

"The [internal] clients said, 'I'm not in business to make profits for IS. Besides, they are not very good.' The result was [that] the client community began to avoid central IS and began doing 'bootleg' IS," Lodahl says.

Meanwhile, IS got the green light to take on as much outside business as it wanted. "What [IS] discovered was [that] they didn't know how to market. They had no idea how to sell their services outside."

In a year and a half, the IS organization "lost a fair amount of inside work to bootleg shops and failed to get more outside work. The profit center experiment was considered a failure" and ended, Lodahl says.

The CIO in this case was transferred. But other CIOs and their IS organizations may not be so lucky: "If you try to be a profit center and aren't competitive, then people say, 'let's outsource them.'" Lodahl says. After all, it's a small step from outside service provider to outsourcer.

"Over 90% of the companies I've run across that set up IS as a profit center do not build a profit into their rates. They are still a full cost-recovery kind of environment."

Terry Quinlan,
Executive director, Financial Management of Data Processing Association, San Francisco

Successful contrarians

Over in Secaucus, N.J., the CIO at Walter Cronkite's old outfit, CBS, Inc., has had better luck.

CBS Data Services, the broadcaster's 2½-year-old outsourcing business, has a dozen major clients, has achieved profitability and brings in 33% of CBS's IS budget, up from 15% the previous fiscal year, according to John M. Lalli, vice president of MIS operations.

What has Lalli been doing right?

"If your peers are profit center managers, it's much easier to deal with them when you're making a profit yourself and running IS like a business rather than like a staff function. And when you're not, then all you are is a pesky staff person."

John Dieeem,
managing director and chief operating officer, Beta Systems, Inc., Brookfield, Wis.

First, a few things made his proposal palatable to his line management. IS was not alone: Another staff function, television studio operations, was already working on the same premise, leasing studios and studio operations staff to other broadcasters and producers. Lalli also minimized any financial risk to CBS by giving each customer its own dedicated facility. "All costs are sheddable if the outside clients disappear. The engagement pays for itself," he says.

Second, Lalli says there is strength in being a small, niche player, and his unit tends to attract customers who agree. Many of his customers are companies that no longer wish to do business with big outsourcers. Lalli keeps his client base to a small, manageable number. And he sticks to a particular area that is not labor-intensive: on-line, real-time transaction processing services on legacy mainframe systems.

That's the way it is at CBS Data Services: It is succeeding in large part because it is not the sole exception, is not growing too big, is not asking for additional funding and is not drawing computing resources from the IS support function.

At Brown-Forman, Lennon has found other ways to make his IS profit center work.

First, don't let IS look like a price-gouger. Lennon brings in outside auditors to determine the actual cost of the IS services and then charges below cost overall. "We refer to that as our 'stretch'. It's been as high as $850,000," Lennon says. Exceptions are services that IS is trying to discourage by charging higher prices. Accidental profits are returned, users are free to go outside, and prices and service levels are negotiated up front.

Users are billed in plain English for services they understand and need. They are not charged for CPU cycles or maintenance hours but "things you can touch and feel. We charge [a fee] per checks mailed, paychecks cut, cases of whiskey shipped, orders taken, phone calls made," Lennon says.

Lennon had no illusions that his IS organization could educate users by itself. He hired a public relations firm to help explain the benefits of becoming a profit center. Lennon also paid attention to the fears of his own IS employees, who worried that users would go elsewhere for IS services.

But perhaps most important of all were the days of off-site meetings with his managers to hammer out IS's new business, Lennon says.

"They'd have to stand up to the whole group and explain what products they would sell, how they would define them and what the units of measure were," Lennon says. "That was interesting. Someone would say, 'I'm going to sell a phone connection,' and people would boo. Some people would say, 'No one wants to buy a phone connection; they want a phone service.' So we went back and forth on all our products. What did customers really want to buy? What would really motivate their behavior?"

No! No! No!

Should IS organizations be allowed to make money selling IS services to other companies? This is how three CEOs responded to this question at the University of California at Los Angeles I/S Associates Symposium on May 11, 1994.

Thomas E. Epley, chairman and CEO, Technicolor, Inc., Los Angeles:
"It stinks."

Michael E. Rossi, vice chairman, BankAmerica Corp., San Francisco:
"I agree. I don't want to sell my competition my product."

Epley:
"An organization needs a high degree of focus to get things done. It's hard to focus on two, three or four business principles. That just creates so much divisiveness. It doesn't work. It doesn't ring. If you have excess people and capability, then shrink the IS department."

Thomas V. McKernan Jr., president and CEO, Automobile Club of Southern California, Los Angeles:
"I agree with you. . . . It's foolish to put advanced technology in the hands of your competitor. But even if you don't . . . stick to your knitting. [To do otherwise] will distract [your IS organization]."

Can this paradigm be saved?

Like other management approaches, the IS profit center concept should not be regarded as a cure-all but rather a practice that can work if the conditions are right or can be made right.

If it remains strictly an internal, not-for-profit affair, you can derive most of the benefits of IS profit centers. But you need in define products carefully, work hard to reduce costs and leave users with the feeling they have more control over IS expenditures than before, not less.

Once you attempt to market your services to the outside world, it's much harder to succeed.

How did Max Hopper do it?

Part of the answer is that The Sabre Group evolved in a slow, step-by-step process. Also, Sabre's prices remain competitive: It charges at market rates, as long as the market isn't charging excessive rates.

But perhaps the real secret was Hopper's own skepticism. "I was one of the folks that resisted for a very long time," he says.

"If there's anything I've learned in trying to create a lot of business units in the last 10 years, it's that there are an awful lot of ways you can fall out of bed." ■

Alter is *Computerworld*'s senior editor, management. His Internet address is aalter@cw.com.

A return to the 3R's

By Leslie Goff

IS executives find that revisiting the classroom for summer executive development programs is Rewarding, Rejuvenating and Rigorously challenging

The trees are budding, the temperature is rising one day and falling the next and everyone on staff — you included — seems to be operating with a missing part or two. It's spring and time to plan this summer's family vacations, weekend cookouts and . . . executive development programs.

The summer offers ample opportunities for information systems managers and executives to return to the classroom for lectures, examinations of case studies and discussion groups. Topics range from change management to the 21st century organization to human resources issues in telecommunications.

The most comprehensive programs are sponsored by executive education offices at major colleges and universities; quick hitters take the form of two- and three-day seminars hosted by research centers and professional organizations.

Many classes bring together both senior IS and general managers to discuss technology issues from an organizational point of view. Other courses target specific job functions, and some are industry-oriented, aimed at IS executives in government computing or higher education, for example.

There are plenty of classes from which to choose. More than 700 short-term executive development programs are offered nationwide by colleges, universities and nonprofit organizations, according to *Brickers International Directory: University-Based Executive Programs*, published by Peterson's Guides, Inc. in Princeton, N.J. Of the 720 programs profiled, 26 are offered in technology management, 100 in leadership, 74 in business strategy and 190 in business management.

Of the 40,000 executives who attended such programs in 1993, 11.8% attended technology management programs, according to a survey Peterson's Guides conducted last spring and published in *Brickers* last fall. The survey projects that the number of executives enrolling in development programs will increase by 50% during the next five years.

What's the reason for the growing numbers? Executives say they find returning to campus rewarding, rejuvenating and rigorously challenging.

Rich Diesk, program manager of corporate sales and marketing systems at Allied Signal, Inc. in Morristown, N.J., says he attended a course at Harvard University last summer "to hear from other people who were general managers and IS managers in other industries about how they were dealing with some of the issues we're facing — contemporary issues like outsourcing and business process re-engineering.

"The course was heavily attended by international executives — about 30% — so I got a much better perspective on the unique problems and challenges that managers in the Far East and Europe were dealing with and the common problems we share," Diesk says.

A word of warning: Participants face a grueling schedule, covering 40 to 50 in-depth case studies in 12 days. Classes are held all day, followed by evening discussion groups and preparation for the next day's case studies. ■

Goff is a freelance writer in New York

Hot summer sessions

A variety of executive development programs is available on top technology issues, from leveraging IS assets to managing IS projects

● **Current Issues in Managing Information Technology: Restructuring IT Assets for Business Value**
The four-day seminar addresses critical issues in restructuring the IS function to leverage key assets, including staff, technology infrastructure and business partner relationships. It is intended for senior IS managers and general managers who make decisions related to the use of IS. Topics include managing IS resources as a value center, inventing the organizations of the 21st century and adopting object technology. Faculty includes John Rockart, Michael Treacy and Judith Quillard.
DATES/LOCATION: June 12-15, Hyatt Regency Cambridge, Cambridge, Mass.
FEE: $2,400, including materials, luncheons, receptions and banquet. Early registration is advised.
CONTACT: Center for IS Research, Sloan School of Management, MIT, 77 Massachusetts Ave., E40-182, Cambridge, Mass. 02139 (617) 253-2348.

● **Delivering Information Services**
The two-week workshop is for senior executives at companies with substantial technology commitments. The program centers on lectures, discussion and study groups and uses real case studies. Topics include business process redesign, managing the networked company, organization transformation and outsourcing. Faculty includes F. Warren McFarlan, Lynda Applegate and Richard Nolan.
DATES/LOCATION: July 16-July 28, Harvard Business School, Cambridge, Mass.
FEE: $9,000, including books and materials, private suite and meals (except weekend evenings). Registration is required six weeks before start of program. Fee is due 30 days in advance.
CONTACT: Executive Education Program, Harvard Business School, Harvard University, Soldiers Field Road, Glass Hall, Room 200, Boston, Mass. 02163-9986 (617) 495-6926. Fax: (617) 495-6999. Internet: executive_education@hbs.harvard.edu.

● **Information Technologies and Procurement Reform: Better Quality? Lower Cost? Electronic Commerce?**
The "diagnostic workshop" for IS managers in federal, state and local government will explore reforms in IS products and services procurement as well as ways that IS can better support the procurement process. Cosponsored by the National Association of State Information Resource Executives and the National Association of State Purchasing Officials. Faculty is from the John F. Kennedy School of Government at Harvard University.
DATES/LOCATION: June 1-2, Taubman Building, The Kennedy School, Harvard University, Cambridge, Mass.
FEES: $660 for attendees from public agencies, $1,350 for attendees from private firms. Fee is due by May 26.
CONTACT: Strategic Computing and Telecommunications Program, John F. Kennedy School of Government, Harvard University, 79 JFK St., Cambridge, Mass. 02138 (617) 495-3036. FAX: (617) 496-1722. Internet: stratcom@ksgrsch.harvard.edu.

● **The MIT Executive Short Course for Chief Network Officers: Managing the IT Network for Global Competitiveness**
The five-day course focuses on the role of IS as a strategic tool and the roles of the chief network officers, developer of the infrastructure, as both technical guru and business executive. Uses case studies to consider key management and technology issues facing chief network officers and their organizations. Topics include IS management in 21st century organizations, the shared network infrastructure, network and systems management, strategic applications of network technologies and strategies for telecommunications management. Faculty includes John Rockart, Jeanne Ross and Stuart Madnick.
DATES/LOCATION: July 10-14, Sloan School of Management, MIT, 77 Massachusetts Ave., Cambridge, Mass.
FEE: $4,500, including materials and meals. Early registration is advised.
CONTACT: Center for IS Research, Sloan School of Management, MIT, 77 Massachusetts Ave., E40-182, Cambridge, Mass. 02139 (617) 253-2348. Internet: jross@sloan.mit.edu.

● **The CAUSE Management Institute: The Professional Development Program for Managers and Directors of Information Resources in Higher Education**
Separate programs are offered for managers and directors to explore IS management issues in higher education. The manager program focuses on issues such as quality and service, organizing principles, personnel management and career trends in information technology. The director program focuses on issues such as creativity and innovation, process re-engineering and change management. Faculty includes Carlos Bennett, David Ernst and Jan Baltzer.
DATES/LOCATION: June 25-29 for director program, August 13-17 for manager program. Events Center, University of Colorado, Boulder, Colo.
FEES: $950 for CAUSE members, $1,425 for nonmembers, including materials, most meals and lodging at the Best Western Boulder Inn (shared occupancy; add $150 for private room; subtract $150 if providing your own accommodations).
CONTACT: Chris Vinall, registrar, CAUSE, 4840 Pearl East Circle, Suite 302E, Boulder, Colo. 80301 (303) 939-0315. FAX: (303) 440-0461. Internet: inst@cause.colorado.edu.

● **Project Management Institute Regional Seminar on Project Management**
Several sessions deal with project management in software development and telecommunications. Topics include managing project risk, managing remote teams, estimating software development projects, project team building for novices, telecommunications project management, human behavior issues in telecommunications and advanced telecommunications project management. Day-long sessions will center on case studies and exercises. Instructors are professional project managers and project management trainers.
DATES/LOCATION: July 17-19, Crown Plaza Ravinia, Atlanta.
FEES: Range from $325 to $375. Early registration is advised.
CONTACT: Project Management Institute, 130 S. State Road, Upper Darby, Pa. 19082 (610) 734-3330 or (800) 734-4843 after May 15. Fax: (610) 734-3766.

Guides to summer offerings

Further information on summer executive development programs is available in specialized college guides via the Internet and by calling your local college or university.

● *Peterson's Brickers International Directory: University-Based Executive Programs* profiles more than 700 executive development programs in the U.S. To order the 1995 edition, call Peterson's customer service department at (800) 338-3282, Ext. 440. The 1,012-page directory costs $295. (You can also try your local public or university library.) Peterson's also hosts an Education Center on the World-Wide Web server via the Internet (http://www.petersons.com). Each college or university participating in the Education Center has its own Web site that lists programs, application requirements and other downloadable information. Career information and job listings will be available on the center later this year.

● Cause, the association for managing and using information resources in higher education, based in Boulder, Colo., also publishes on-line information about professional development seminars, workshops, conferences and publications for IS executives in higher education. This information attracts executives in other fields as well.

To access the Cause listings via the Internet, use the Cause gopher server (gopher://causegopher.colorado.edu/) or the World-Wide Web server (http://causewww.colorado.edu/).

Calling universities blindly and trying to navigate through various departments and academic paper-pushers — who although helpful are not always well informed — can prove frustrating and unproductive. Ask for the executive education office; if there isn't one, it's likely the school doesn't have a summer course, but you can also try asking for the business school or the continuing education department.

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Intelligence Files

Two heads better than one

To achieve high performance in information systems, many large companies may need two chief information officers: one to focus on technology infrastructure and the other to focus on people skills. That is the conclusion of Richard D. Buchanan in his report "High Performance IT" from Forrester Research, Inc.

Buchanan said although many large companies have "learned to roll out distributed systems with predictable results," too often they "cannot leverage these systems because they have neglected the 'soft' issues — the skills gap, retraining, management and visionary leadership."

The result, Buchanan said, is that "the competitive game is moving to a higher level, and most MIS organizations are woefully prepared to compete under the new rules.

"MIS has often paid lip service to the idea of helping the corporation achieve a competitive advantage. Now, CEOs are beginning to call in the chips. CIOs who have failed to invest in human capital will find that low computing costs are a pale substitute for all-around excellence. Many companies will find that one CIO is not enough. To achieve high-performance [information technology], they may need a two-headed CIO — one to focus on infrastructure and one to focus on mastery."

What would this two-headed CIO look like? Buchanan said the infrastructure CIO would focus on standardizing technology and making it work. The individual would come from a systems operations and development background. His favorite saying, Buchanan said, might be, "Let's focus on technology that matters."

In contrast, the mastery CIO would be responsible for hiring great people and training, inspiring and leading them. This CIO would come from a general business management background. His favorite saying might be, "Let's win every company award."

Hitting the security alarm

IS executives are increasingly worried about the security of their information assets, and the greatest threat to that security may be their employees.

According to a recent survey of 95 information security managers attending the Annual Computer Security Institute Conference in Washington, more than 90% of the respondents said corporations face a greater security risk than they did a year ago. The most significant threats to information systems reported were disgruntled employees (95%), electronic-mail breaches (92%), hackers and unauthorized outsiders (91%) and unauthorized dial-up access (83%). And the biggest obstacles to combating the threats include insufficient IS budgets (55%) and senior management's lack of concern for security issues (48%).

More than half of the respondents cited the threat of unauthorized access over the Internet as a security risk, with 31% calling the risk significant. More than half of the respondents said their companies have no Internet security in place, and 32% said the threat of unauthorized access via the Internet prevents their organizations from expanding their Internet access.

Nearly half (45%) of the respondents said they are aware of unauthorized access to their networks. In addition, 11% said their organizations reported significant financial losses (amounting to at least $100,000) from network break-ins.

Do your salaries stack up?

Want to know if you're salary and bonus plans are competitive? A new book from the Data Processing Management Association and the Association for Systems Management can help. *Compensation in the MIS/dp field, 12th Edition*, looks at the salary and bonus levels of IS managers, supervisors and professional and nonprofessional employees.

The 687-page book takes a statistical look at 91 separate job functions, from junior data entry operator to director of MIS/data processing. Salaries, salary ranges and total cash compensation are broken down by type of employer, size of organization, total IS budget, level of computer hardware and use of telecommunications and batch/on-line processing. They are also broken down according to the number of programmers and systems analysts on staff, operating systems, geographic location (region, state and metropolitan area), education, experience and supervisory responsibility.

The book is available for $750 from Abbott, Langer & Associates, Dept. DO, 548 First St., Crete, Ill. 60417. For smaller corporations, *Compensation in Smaller MIS/dp Organizations* is available for $250. This book looks at 26 benchmark jobs in organizations with fewer than 10 programmers and systems analysts.

Honoring the best in IS

The best and the brightest in IS are being sought for the Seventh Awards for Achievement in Managing Information Technology. The awards are cosponsored by American Management Systems (AMS) and the Graduate School of Industrial Administration at Carnegie Mellon University.

The annual awards recognize senior executives and professionals who have made outstanding contributions to their organizations, and often their industries, through effective use of information technology.

"In today's competitive environment, senior executives and professionals continue to look to the promise of information technology to help achieve breakthrough performance within their organizations," said Charles O. Rossotti, chairman of AMS. "In seeking candidates for the Seventh Awards program, our goal is to recognize individuals who have developed the technology vision and provided the leadership to turn that vision into reality."

Nominations for the Seventh Awards can be made by chief executive officers and other top executives at private and public organizations. Nominations are due May 31. The awards will be presented in November. For more information, contact Jan Dodson, AMS, 4050 Legato Road, Fairfax, Va. 22033, (703) 267-5043.

Better benchmarking

An instructional booklet from the American Compensation Association offers advice on improving reward systems through benchmarking as well as avoiding pitfalls that can distort results and cause an organization to make unfavorable changes in its practices.

In *Benchmarking Rewards Systems: An Approach to Identifying and Applying Best Practices to Facilitate Organizational Change*, authors Douglas G. Shaw and Craig Eric Schneier offer sample topics and questions that can help ensure effectiveness for a benchmarking team. They also offer sources to help identify rewards practices, an interview guide and action plan and a case study that demonstrates the effectiveness of the process. They say managers and team leaders can avoid pitfalls through advance planning, careful analysis and plenty of communication.

The booklet costs $19.95 for ACA members and $24.95 for nonmembers. It can be ordered from ACA Publications Orders, P.O. Box 29312, Phoenix, Ariz. 85038-9312.

Name change for AIIM

The Association for Information and Image Management has officially changed its name to AIIM International. The name change reflects the association's international outreach, which includes the opening of an office in Europe, the founding of chapters outside of the U.S. and the addition of several new shows.

"The document management revolution is in a transnational phenomenon," said AIIM President Sue Wolk. "To limit the association that serves the industry to one country would be artificial. Our new name more accurately reflects the fact that we already have members in over 150 countries." AIIM International has 9,000 individual members and 630 corporate members worldwide.

On time, some of the time

Although on-time deliveries are improving overall among high-tech companies, late deliveries still plague the average high-tech company four to five times more than top performing competitors in all industries. That is the finding of the Third Supply-Chain Performance Study of 160 manufacturing companies conducted recently by Pittiglio Rabin Todd & McGrath in Weston, Mass. The good news is that the study also found that high-tech companies that are re-engineering their supply chain processes can respond to last-minute customer demands twice as fast as their competitors.

Video looks at technologies

The value of several new technologies for increasing productivity and improving service is examined in the new video "The Information Partnership: Embracing New Technology," available for $15 by calling Billie Saunders at Lexis-Nexis, (800) 426-7675.

Executive Track

Legent Corp. in Herndon, Va., a supplier of software and services for the management of distributed computing, has announced the appointment of **Glenn C. Hazard** as vice president of business transformation and chief information officer. He will be responsible for leading the company's business and quality processes, the Legent Data Center and worldwide network and business application development.

Prior to his appointment, Hazard was senior vice president of business transformation at AT&T Global Information Solutions. In that position, he was accountable for all short-term profit improvement initiatives, re-engineering efforts, customer satisfaction, profitable growth and shareholder value.

Prior to that, Hazard was senior vice president of business process engineering at AT&T GIS and AT&T Global Business Communications Systems Division. He has directed re-engineering efforts since April 1990.

Staten Island University Hospital in Staten Island, N.Y., has announced the appointment of **Patrick B. Carney** as vice president and CIO. Carney replaces **Don Muir**, who became vice president of business development.

Prior to his appointment, Carney was director of information systems at ABB Power Generation, Inc. in North Brunswick, N.J.

CSX Technology, Inc. in Jacksonville, Fla., announced that President **George F. Sekely** has retired. **John F. Andrews**, vice president of applications systems, has been named to replace him.

Longtime IS executive **William L. Below** recently joined a small and select group of CIOs who have gone on to become chief executives. Below recently assumed the top post at **TransQuest Information Solutions**, a joint venture between Delta Air Lines and AT&T OIS. Below will direct TransQuest's mission to furnish IS services to Delta as well as sell software and services to other airlines.

Prior to his appointment, Below was CIO at W. R. Grace & Co., a specialty chemicals company in Boca Raton, Fla. Prior to that, he was an IS executive at railroad giant CSX Corp.

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Calendar

MAY 7-13

Navigating IT and Policy Crosscurrents: Strategies for Better Government. Williamsburg, Va., May 7-9 — Keynote speakers: Ellen Brown, procurement counsel, Committee on Reform and Oversights, U.S. House of Representatives; Bill Greenwalt, chief investigator, Senate Committee on Government Affairs, Oversight of Government Subcommittee; Cynthia Kendall, deputy assistant secretary, information management, Department of Defense; Steve LeCompte, vice president, International Data Corp. (IDC) Government Market Services; David Moschella, senior vice president, Worldwide Research, IDC Contact: IDC Government Market Services, Falls Church, Va. (703) 876-5055.

Computer/Human Interaction '95: Association for Computing Machinery's Conference on Human Factors in Computing Systems. Denver, May 7-11 — Contact: Terry Roberts, US West Advanced Technology, Boulder, Colo. (303) 541-6602

Benchmarking High-Performance Work Teams: Strategic Approaches for Increasing Productivity and Customer Satisfaction. Washington, May 8-10 — Fees: $895, or $795 each for three or more people. Contact: Kay James, Clemson University Office of Professional Development, Clemson, S.C. (803) 656-2200.

DECUS '95. Washington, May 9-11 — Contact: Digital Equipment Computer Users Society (DECUS), Shrewsbury, Mass. (800) 332-8755.

Joint Application Development (JAD) Session Leader Workshop. Stamford, Conn., May 9-11 — Focus is on how to manage and facilitate JAD projects. Workshop provides training in facilitation skills and techniques needed for capturing the deliverables for the JAD life cycle, information strategy planning, business area analysis and business system design. The workshop also demonstrates the role of JAD in rapid application development projects. Each participant receives a JAD session leader workshop kit and a seminar handbook. Fee: $1,275. Contact: Piersoo Applications Development, Inc., Stamford, Conn. (203) 322-1606.

Electronic Commerce: Paving the Way for the Information Superhighway. Los Angeles, May 10 — Sponsored by Information Systems Associates of the John E. Anderson Graduate School of Management. Contact: Ginny Hyatt, UCLA, Los Angeles, Calif. (310) 825-1879.

Electronic Banking '95: Develop a Strategic Vision to Maximize Your Market Share and Profit Potential on the Electronic Banking Superhighway. Washington, May 11-12 — Contact: Conference Administrator Institute, New York, N.Y. (212) 661-8740.

Consumer Electronics Group Interactive. Philadelphia, May 11-13 — Sponsored by the Electronics Industries Association's Consumer Electronics Group. Contact: Jonathan Thompson, Electronic Industries Association, Washington, D.C. (202) 457-8728.

MAY 14-20

Interactive '95. Anaheim, Calif., May 14-17 — Topics: "Design Methodology and Resources," "The State of the Art of Multimedia Technology," "Research and Implementation Strategies." Contact: Ziff Institute, Medford, Mass. (800) 348-7246.

Enterprise Product Data Management: The Next Generation. Boston, May 15-16 — Learn how to access and satisfy your organization's product data management needs, add systems as your requirements change, what to expect after the pilot phase and the potential time and cost savings of data management. Contact: The Management Roundtable, Boston, Mass. (617) 232-8080.

Calendar announcements should be submitted at least six weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and phone number.

SEND ANNOUNCEMENTS TO:

David Weldon, Associate Editor/Management, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701. Fax: (508) 875-8931.

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The CW Guide to Operating Systems

The [illegible] Desktop

IS [illegible]

BY KEVIN BURDEN

LIKE Coke vs. Pepsi, the battle for the next-generation desktop operating system comes down to a matter of taste. Connoisseurs are absolutely convinced that one is better than the other. The rest of us can't tell the difference.

Today, the key distinction between operating systems for Intel Corp.-based PCs is 16-bit vs. 32-bit. Microsoft Corp.'s familiar DOS and Windows 3.1 are 16-bit operating systems. Microsoft's next version of Windows, Windows 95 (formerly called Chicago) and IBM's OS/2 are 32-bit products.

FIRING LINE

Sixteen-bit operating systems use segmented memory, which limits the amount of memory an application or component can access to 64K bytes.

Thirty two-bit operating systems use a different memory model that allows an application or component to access up to 4G bytes of memory. The 32-bit memory model removes 16-bit performance penalties and allows true multitasking.

A finer distinction that information systems organizations must examine is which vendor's 32-bit implementation best suits their needs. The decision must also take into account the market position of competitors. Applications for the most popular platform will be available first.

Although IBM is ahead of its competitors with a 32-bit platform in OS/2, its installed base of 8 million is only a fraction of Windows' 60 million to 80 million users.

This is confirmed by IS organizations' desire to upgrade to Windows 95 rather than switch to the new OS/2 environment (see story, page 116).

Despite upgrade costs estimated at $1,000 per desktop and OS/2 Warp's higher user satisfaction scores for multitasking, failure recovery and technical support, the majority of users seem poised to jump on the Windows 95 bandwagon (see story, page 118).

To examine the key differences between the Windows 95 beta and OS/2 Warp, we interviewed four large IS shops that are evaluating both products. These are their site profiles:

Large oil and gas firm: The company has more than 25,000 client desktops — 80% run Windows and 20% run either OS/2 or Unix. If the OS/2 applications can be ported back to Windows, there is a chance the OS/2 users will also upgrade to Windows 95. Complete migration to Windows 95 is expected to take a year.

Health care company: The organization has more than 60,000 client desktops — 70% run Windows or DOS and 30% run OS/2. Ninety percent of all mission-critical client desktops run OS/2 because of its robustness and multithreaded applications. OS/2 users are rapidly upgrading to OS/2 Warp. Windows users will migrate to Windows 95 eventually.

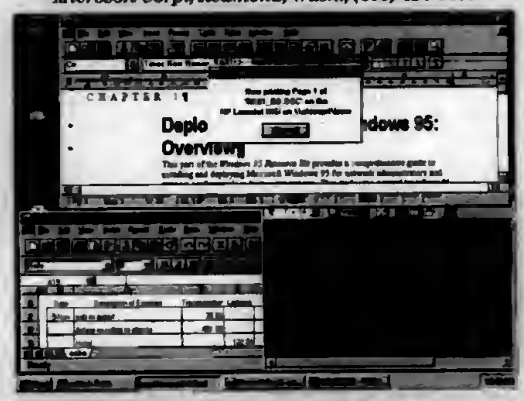
University: The university has approximately 2,000 client desktops. Two hundred run OS/2, and the rest run Windows. All users will upgrade their respective operating systems, but slowly. RAM and processor upgrades will cost the university between $400 and $1,000 per desktop.

Utility: The company has nearly 30,000 client desktops — 85% run Windows, 15% run OS/2. Upgrading to Windows 95 will be slow.

32-bit desktop, *page 114*

Windows 95 (Beta M8)

Microsoft Corp., Redmond, Wash., (800) 426-9400



Windows 95's interface looks familiar, but it will be clear to users that they are in a new environment. The most common functions, such as launching an application, task switching or file searching, are now handled by the push-button task bar along the bottom of the screen.

OS/2 Warp

IBM, Armonk, N.Y., (800) 426-3333

OS/2 Warp Connect, the next version of Warp, will rectify the current version's chief deficiency by adding built-in networking capabilities. Its interface, shown above, will not change from today's look.

Windows 95 vs. OS/2 Warp

Connectivity, applications favor Microsoft; IBM provides true 32-bit features

Windows 95	Oil and gas firm	University	Utility
Ease of use The new interface won users over. The registry caught the eye of administrators.	8	6	8
LAN connectivity Windows 95 has loads of built-in networking and slick plug and play, making setup and remote connections easy.	9	7	7
Performance Evaluators said Windows 95 was as much as 40% faster than Version 3.1 under normal load conditions, but still not as stable as NT or OS/2.	8	8	7
Memory management Evaluators did not experience the memory consumption problem that reportedly occurs when several 32-bit applications are opened.	8	8	7
Applications breadth Windows 95 inherits the mounds of 16-bit applications, but users are impatient for 32-bit applications.	5	4	3
Multitasking Greatly improved over Windows 3.1, but not to the level of OS/2 Warp.	8	5	6

OS/2 Warp	Oil and gas firm	University	Health care firm
Ease of use Warp's pure object orientation makes certain tasks easier.	6	7	6
LAN connectivity Scores suffered from no built-in network support or plug and play capabilities. Warp Connect will at least fix the networking.	3	4	8
Performance OS/2 is still the best choice for mission-critical applications where reliability really counts.	7	7	8
Memory management Memory allocation was easy for mission-critical applications where reliability really counts.	6	8	8
Applications breadth Lack of native applications killed scores, but running custom mission-critical applications is most important.	5	—	4
Multitasking Time savings is the most useful benefit of Warp's true pre-emptive multitasking.	8	7	8

Ratings are based on a 1-to-10 scale where 10 represents extremely high satisfaction and 1 represents not satisfied at all. If the evaluators felt they did not have the experience to comment, (—) replaces a score.

32-bit desktop

CONTINUED FROM PAGE 113

Choice pockets of users will upgrade in the next two to three years based on whether they can benefit from 32-bit applications. OS/2 users will move to Warp.

Key differences cited by evaluators included the following:

- **LAN connectivity:** Windows 95, due out in August, had the upper hand with its superior plug and play capability, while IBM has been slow to introduce a version of Warp (Warp Connect) that includes corporate networking capabilities.
- **Performance:** OS/2 Warp's superior multitasking and stability (it is a delivered product) and Windows 95's limitations (it has to incorporate 16-bit legacy code) were points in OS/2's favor.
- **Memory management:** Because beta testers had trouble with Windows 95 running multiple 32-bit applications, they favored OS/2. However, Windows 95 users said they fully expect the product to improve in its final form.
- **Applications breadth:** The one clear advantage for Windows 95 was breadth of application support. As the progeny of Microsoft, Windows 95 already has the allegiance of most major commercial applications vendors. OS/2 has more than 2,500 applications, but it's still second choice.

LAN connectivity

The distinction in this category will be largely moot once IBM ships Warp Connect, the next Warp version that integrates enterprise, peer-to-peer and remote networking capabilities. But its lack of plug and play is still a problem. True plug and play means the system automatically reconfigures itself, allowing for easier setup.

"Warp has plug and tell, not play," the health care company says.

Performance

Despite its 32-bit design, Windows 95 is hampered by the need to be backward compatible with Windows 3.1 applications, making it susceptible to familiar 3.1 crashes.

Pre-emptive multitasking lets Warp run DOS, 32-bit and 16-bit Windows applications concurrently without a drop in performance, the health care user explains. "Our mission-critical machines (imaging, data entry, customer service systems) run Warp because of the time saved and performance we get by multitasking and multithreading."

Both IBM and Microsoft say their respective operating systems require only 4M bytes of memory, and they are right, the evaluators say.

However, "We'd really be limiting ourselves if we only used 4M bytes [for Warp]. I mean, using only 4M bytes is like throwing your investment away. We wouldn't be able to do the things we upgraded for," the utility says. ■

Burden is *Computerworld*'s senior researcher, Scorecard/Firing Line.

Microsoft responds

Performance: Windows 95, even in the beta version, runs 16-bit applications much faster than OS/2. In the final version, performance will likely be even faster. Because Windows NT only requires 16-bit code to maintain compatibility with existing applications, it offers a more stable platform for running 16-bit applications than Windows 3.1.

32-bit multithreading bugs: Our feedback from users — 50,000 beta testers and approximately 400,000 preview program customers — is that the vast majority are running multiple 32-bit applications under Windows 95 without problems.

IBM responds

LAN connectivity (plug and play): Plug and play is a hardware and software combination requiring PCMCIA or Peripheral Component Interconnect (PCI) bus hardware for implementation. OS/2 Warp offers plug and play for PCMCIA modem memory and hard drives. Future versions of OS/2 Warp will add plug and play support for PCI bus systems.

Conversion: OS/2 Warp Connect will be available with and without built-in Win-OS/2 support, and there will be an upgrade path for each. OS/2 Warp users with Win-OS/2 or OS/2 Version 2.11 will be able to upgrade their OS/2 to add Warp Connect.

▶ See Guide continued on the following pages for more on 32-bit operating system choices.

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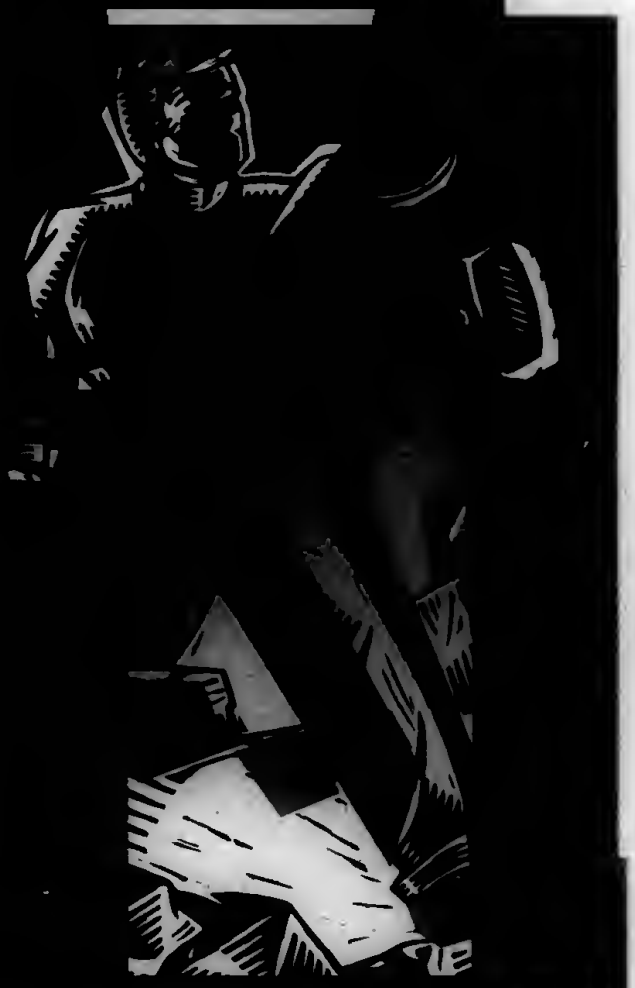

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Users Bet on Microsoft Products

BY CHERYL GERBER

Memory and multitasking problems in the latest beta release of Microsoft Corp.'s Windows 95 are causing information systems managers to adopt a cautious, wait-to-buy attitude. But most users interviewed seem happy enough with Microsoft's current products — Windows 3.11, Windows NT and key desktop applications — that they are willing to wait for Windows 95 to grow into a good version.

However, they are not willing to wait too long. Having grown more computer literate and market savvy with each passing year, users carry high expectations of Microsoft. Although they have developed brand loyalty, users expect the world's largest software company to make good on its promises.

"We're a Windows shop, and we've already put a Windows 95 upgrade in the budget," says Peter Barone, database administrator for the city of Buffalo, N.Y. "When it finally gets released, we'll get a couple of copies and see if the benefits they are claiming are truly there. Windows 95 still contains a lot of coding for 16-bit. Since it isn't truly all 32-bit, it may not be all the speed and performance they have promised."

"We're only going to go to Windows 95 because that's where the industry is going, and we'd be left out in the cold if we didn't."
—*John Harder, assistant director of IS, New York State Nurses Association, Guilderland, N.Y.*

The bit-ter truth

Even though other 32-bit operating systems such as IBM's OS/2 have been out longer, are streamlined and run Windows well, most users say that either they or their company has chosen Windows 95 as the way to match their current Windows environment (see charts).

"Windows 16-bit applications are faster on OS/2 Warp than they are on Windows NT 3.5 machines, but Microsoft owns the desktop with Windows 3.x. Plus, there aren't enough compatible drivers for OS/2," says Robert Holloway, senior systems analyst at Westinghouse Electric Corp. in Sunnyvale, Calif.

Westinghouse has had OS/2 in-house for the past five years, but it still chose to go with Windows NT. One of the main reasons, Holloway says, is that NT's final release form — unlike its beta versions — contained a more solid implementation of TCP/IP than OS/2. Westinghouse's confidence in NT and other Microsoft software has led to an earlier and easier acceptance of Windows 95 than otherwise might have occurred.

Vendor agenda?

Both users and analysts feel the push to upgrade desktops to 32-bit operating systems is more vendor- than user-driven.

"Vendors push new operating system releases very hard," says Jonathan Eunice, research director at Illuminata in Hollis, N.H. "That doesn't make it the best user decision. There's no reason to be pulled along by the vendors and jump to Windows 95 this year."

Unlike the 32- or 64-bit operating systems in the server world that perform far better with complicated applications such as database managers, 32-bit operating systems provide desktop users with less of an advantage.

"Right now, I don't see the benefit in jumping to Windows 95," Eunice says. "Users should hang on for a year or two and let other people find the bugs. Windows 3.11 runs productivity applications pretty well. There is no major advantage for desktop users just running a word processor, a spreadsheet and a communications package."

Many users feel pushed by Microsoft to go to a 32-bit operating system on the desktop. "We're only going to go to Windows 95 because that's where the industry is going, and we'd be left out in the cold if we didn't," says John Harder, assistant director of IS at the New York State Nurses Association in Guilderland, N.Y.

For most, the issues surrounding the move to Windows 95 are more about timing than anything else.

"In the long run, the upsides of moving to Windows 95 will outweigh the downsides. But in the short run, there will be a lot of cost and compatibility problems," says Dean Andrews, master instructor of computer science technology at Texas State Technical College in Sweetwater.

One change at a time

Some users will wait before facing the pain of the big change because they are already dealing with a big switch to client/server. They want to portion out their changes and manage one at a time.

Buffalo, for example, is in the middle of a four-year conversion from mainframe to client/server computing. The city built its foundation on Microsoft client/server products. Although Barone and others do not yet take Windows 95 seriously as a full-fledged operating system, they have had enough positive experiences with other Microsoft products to feel some brand loyalty.

Those in the medical world feel similarly. "I don't see the big advantage of a 32-bit operating system on the desktop at this point in time," says Robert Hoenig, systems analyst at Beth Israel Medical Center in New York. "There's nothing it can do right now that a 16-bit can't."

In several cases, the growing dissatisfaction with OS/2 spurred a switch to Windows 95. "Until Warp, there were hardware incompatibilities and poor software selection with OS/2," Harder says. "Warp solved some of the hardware problems, but it still hasn't encouraged the amount of software writing as it should relative to Windows. I have had to tweak OS/2 settings more than Windows 3.11. Half of that is because Windows has every possible driver there is."

"I've evaluated OS/2, and it's now a solid product. But OS/2 2.1 was so

Windows 95 lags NT and OS/2 in satisfaction . . .

Microsoft Windows NT Server 3.5 Latest release of Windows NT appears to be more solid	7.7
IBM OS/2 Warp Full Pack Warp with Windows included. This package is used primarily as a server.	7.6
Novell NetWare 4.1 The de facto file and print server standard, but still tied to its DOS roots	7.4
IBM OS/2 Warp A desktop client that runs with Windows	7.4
Sun Solaris 2.4 Relatively new to Intel platform, Solaris has its best chance in Sun shops	7.3
Novell UnixWare 2.0 Server Novell's acquired Unix suffers from unclear positioning with NetWare	7.3
Microsoft Windows NT Workstation 3.5 The desktop NT appeals to engineers and workstation users	7.2
Microsoft Windows 95 beta (multiple versions) Users are willing to wait until this beta matures	7.0
SCO Unix The longtime Unix leader on Intel faces new challengers such as Sun	6.9

Based on a 1-to-10 scale where 10 is most satisfied. Survey base: 50 users per product.

Despite IBM Strengths

If Windows 95 can match high expectations, users say it will be the 32-bit desktop king

. . . but Windows' position as the installed base leader . . .

The majority of users chose their 32-bit operating system based on the system they already had

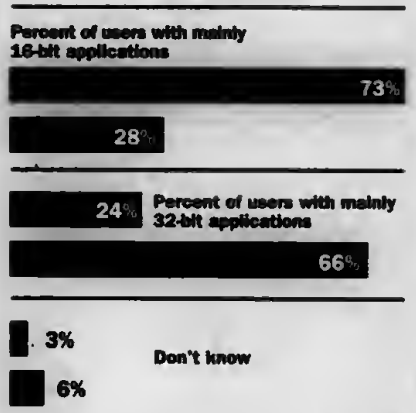
	MICROSOFT		NOVELL		IBM		SUN	SCO
Reason for purchase	Windows 95 (beta)	Windows NT Server	NetWare 4.1	UnixWare 2.0 Server	OS/2 Warp	OS/2 Full Pack	SunSoft Solaris	SCO Unix
Matches base	40%	32%	55%	24%	26%	35%	38%	24%
Price	8%	6%	2%	12%	26%	7%	6%	16%
Ease of use	8%	14%	5%	8%	10%	12%	8%	2%
Application support	12%	16%	11%	10%	8%	12%	12%	30%
Application tools	8%	4%	4%	2%	4%	7%	6%	0%
Interoperability	8%	8%	7%	14%	4%	12%	8%	2%
Other*	4%	12%	7%	8%	8%	5%	6%	8%
Don't know	16%	10%	9%	22%	14%	10%	16%	18%

Base: 400 users (50 per product) *Other reasons include speed, scalability, security and technical support

Source: Buyers' Satisfaction Scorecard

. . . will lead users to 32-bit applications

The advent of Windows 95 and OS/2 Warp as well as new versions of desktop Unix systems will shift the majority of applications to 32-bit platforms



Base: 450 users of IBM, Microsoft, Novell, Sun and SCO desktop and server operating systems

Source: Buyers' Satisfaction Scorecard

complicated that the ordinary clerk-type user would have had a hard time with it. It's just not industry standard, and it never will be," says Gary Rose, information technology manager at Osram Sylvania, Inc. in Versilles, Ky.

Like Harder, Rose has chosen to follow Microsoft. In anticipation of Windows 95, Osram Sylvania has started to upgrade its hardware to 64-bit Intel Corp. Pentiums. The company uses NT's TCP/IP across its wide-area network exclusively but does not use NT on the desktop. "I love NT as a server but hate it as a desktop," Rose says.

OS/2 disillusionment

Even in the academic world, the disillusionment with OS/2 may have led computer scientists to Microsoft. "OS/2 Warp won't run IEF, Texas Instrument's CASE tool. When we talked to IBM, they said it was a TI problem," Andrews says.

Although Microsoft seems to be dictating the move to a 32-bit desktop, many users feel it is a necessary, albeit painful, move.

"We will upgrade to Windows 95 on the desktop as soon as it comes out," says Kenneth Witt, data processing manager at Timber Truss, Inc., a Salem, Va., hoosing component manufacturer. "From compiler design to application programming, the flat memory of 32-bit has tremendous advantages over the segmented memory model of 16-bit. But we're going to have headaches for years to come running 16-bit legacy applications."

Rosemary Hughes, a management method analyst for the city of Tampa, Fla., says the move to 32-bit is needed to resolve the memory problems and subsequent insecurity of DOS/Windows. "We think the advantages will outweigh the disadvantages. Memory management in DOS/Windows has been a problem," she says.

The memory management problems of DOS/Windows are caused in part by its underlying fixed memory structure, which requires reconfiguring the machine for each application's large or small memory needs, then rebooting the PC to implement the change. If a program uses just a small amount of memory, large sections of RAM are wasted that could speed up hard drive operations if that memory were reassigned.

It's long been known that the real memory mode of 16-bit is far less secure than the protected memory mode of the 32-bit environment. Because there is no memory protection in real mode, ill-behaved programs that access memory not belonging to them can crash the system or destroy other applications. When a processor runs in protected mode, it protects the memory in all applications.

Awkward stage

The pain of the transition to 32-bit will come in large part from the awkward coexistence of the different 16- and 32-bit memory modes.

"There will be software support problems because of the mixed memory modes. When Windows uses the underlying DOS environment, like accessing the hard drive, it drops into 16-bit real mode where there are all sorts of potential for memory corruption," Witt says.

Users dread the high cost of upgrading all hardware and 16-bit applications to 32-bit, along with the cost of retraining staff in the 32-bit environment. Yet why bother to go to a 32-bit operating system if you don't upgrade?

"The training doesn't worry us so much because we'll do our own. It's the applications we keep having to upgrade. If your application doesn't match the operating system, then what have you gained?" Barone asks.

Clearly there will be no gain without pain. And many users are portioning out their upgrade plans, doing only a little at a time to avoid the one big hit of an overall upgrade. Still, most are confident that the pain will be worth the gain.

Andrews says, "History shows me that we've always been able to conquer the initial problems that crop up in computer technology." ■

Gerber is a freelance writer in Kingston, N.Y.

▶ See Guide continued on page 118 for more on user satisfaction with 32-bit operating systems.

IBM OS/2 Wins Tech Points

BY MICHAEL SULLIVAN-TRAINOR

Lack of applications breadth still a sore spot

The latest version of IBM's OS/2 appears to be winning the battle for user satisfaction based on its technical merits, according to our Buyers' Satisfaction Scorecard survey of 450 users of desktop and server operating systems for Intel Corp.-based platforms.

But the edge OS/2 Warp possesses in certain key areas, such as multitasking, technical support and memory management (see "Desktop sweep" chart), will likely not be enough to persuade users to buy OS/2 instead of Microsoft Corp.'s forthcoming Windows 95.

"The fact that Windows is bundled with the majority of personal computer hardware makes it an easy choice," says Jonathan Eunice, research director at Illuminata in Hollis, N.H. "Right now, users would have to actively choose not to use Windows and seek out OS/2 instead."

Users still see application support for OS/2 as a glaring weakness, even though OS/2 is stronger than ever with more than 2,500 applications vendors. OS/2 does not support market leaders such as Word, Excel, Visual Basic and Access — all Microsoft products.

"No matter what IBM does, OS/2 is still not the preferred platform for commercially generic applications. This makes a big difference for desktop users when it comes to getting the latest version from their applications vendors. They don't want to be using a secondary platform," says Rob Enderle, senior industry analyst for client/server software at Dataquest, Inc. in San Jose, Calif.

Few distinctions

Beyond the basic market issues, OS/2's technical edge is not great enough to overcome the obstacles it faces. "The survey results show that there is surprisingly little spread in satisfaction from one product to the next. Everyone is reasonably happy but not ecstatic," Eunice says. "If OS/2 isn't demonstrably and unequivocally better, then users will go with the standard as long as it works. Despite some weaknesses, Windows 95 works even in beta."

Desktop sweep

OS/2 Warp outpoints Windows in multitasking, technical support, ease of use and memory management

	IBM OS/2 Warp	Microsoft Windows NT Workstation 3.5	Microsoft Windows 95 (Beta version)
Reliability	7.1	7.4	6.2
Recovery from failure	6.5	6.6	5.8
Multitasking	8.0	7.4	6.5
Speed	7.3	7.2	7.0
Technical support	7.0	6.2	5.8
Ease of use	7.7	7.0	7.3
Applications breadth	5.0	6.0	6.5
Memory management	7.4	6.8	6.6
Average rating	**7.0**	**6.8**	**6.8**

Ratings are based on a 1-to-10 scale where 10 represents greatest satisfaction. Ratings are in order of importance to server operating system users. Fifty users of each product were interviewed about the product they use

OS/2's server edge

These 32-bit operating systems are used as file and print servers by the majority of users surveyed. Strengths in multitasking, failure recovery and technical support carry OS/2 to the top.

	IBM OS/2 Full Pack	Novell NetWare 4.1	Microsoft Windows NT 3.5
Reliability	8.0	7.9	8.0
Multitasking	8.4	6.7	7.5
Speed	7.7	7.3	6.9
Recovery from failures	7.5	6.9	6.9
Ease of use	7.6	7.0	7.7
Server capability	7.0	7.5	7.6
Technical support	7.2	6.0	6.0
Applications breadth	5.4	7.3	5.5
Average rating	**7.4**	**7.1**	**7.0**

Unix matchup

The Unix 32-bit operating systems for Intel platforms are used as application and database servers by the majority of users surveyed. Solaris edges UnixWare and SCO Unix with high ratings in multitasking, applications support and speed.

	SunSoft Solaris 2.4	Novell UnixWare 2.0	The Santa Cruz Operation SCO Unix 4.2
Reliability	7.2	7.4	7.6
Recovery from failure	7.1	6.8	6.4
Ease of use	6.4	6.7	5.7
Multitasking	8.1	6.9	7.2
Applications breadth	7.0	6.4	6.5
Ease of configuration	5.9	6.5	5.6
Interoperability	7.0	6.7	6.3
Speed	7.3	7.1	6.9
Average rating	**7.0**	**6.8**	**6.5**

Server parity

OS/2's technical prowess also shows on the server side — particularly in speed and technical support (see "OS/2's server edge" chart). However, a stable Windows NT, having matured after a few versions, is providing parity.

Both OS/2 and NT suffer from marginal application allegiance compared with the dominant server products — Novell, Inc.'s NetWare for file and print servers and Unix for non-Intel-based database and applications servers.

"NetWare is aimed at a different environment. It is not an advanced operating system. Its DOS base means it's better at running one application per server. NT is gaining some headway against it," Enderle says.

Unix — the second tier

The Santa Cruz Operation's SCO Unix — long the dominant Unix-on-Intel product — is showing some weaknesses against its new competition from SunSoft, Inc. and Novell (see "Unix matchup" chart).

"SCO is not a technology leader. They don't sell on that issue," Eunice says.

SCO's offerings have traditionally been low-cost, reliable application platform alternatives to classic minicomputer installations. SunSoft's Solaris and Novell's UnixWare are sold on their technical merits and target users familiar with Unix on non-Intel workstations.

This positioning often brings SCO Unix into environments where customized proprietary systems or generic Windows applications are the dominant installed base. Users unfamiliar with Unix rate the product low in ease of use and configuration compared with the other platforms. ■

Sullivan-Trainor is *Computerworld*'s senior editor, CW Guide.

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Ronald S. Elkin, Program Manager, Battelle Memorial Institute

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BEST-OF-BREED APPS *vs.* SUITES

KATHERINE LAMBERT

DOUG MANCHEW

AT ISSUE:

The hubbub over software suites is the result of slick marketing, says one IS pro; picking and choosing individual software packages is the only way to go. Suites are the best business decision, a colleague counters, because they offer fully integrated programs at reduced support and purchase costs.

SOUND OFF!

Give me best of breed!

BY TERRY BREWSTER

If you believe all the marketing hype, software suites will end all your troubles and immediately make you an unbelievably productive media whiz.

Bunk! Why would you want someone else telling you what software to use? You get the feeling you're being told you don't have enough sense to decide what you like. I guess users are supposed to throw away all the software applications they've been using for years and learn something new just because it is all "perfectly integrated into one package."

I won't throw away my Paradox database from Borland International, Inc. just because it isn't part of a suite. Nor will I jettison Software Publishing Corp.'s Harvard Graphics program, which I've been using for six years and five releases. I've been with both packages since they were available only in DOS versions.

Today, both Paradox and Harvard Graphics are available in robust Windows versions that I am quite comfortable with and know how to use very well.

Every week I have numerous charts, graphs, documents, letters (I haven't even touched electronic-mail applications yet!) and so on that I have to produce — and still do my other five jobs. If I am using software applications

Breed, *page 122*

Give me suites!

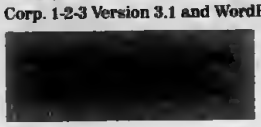
BY WILLIAM DiPAULO

Several years ago, if you had decided to standardize company-wide on a business application suite, you would have been the sad victim of vendor promises — expecting an integrated suite and receiving little more than a marketing bundle.

Today, those promises are a reality. If you haven't standardized on a suite or have no plans to, beware. Your competitors are probably already enjoying the increased productivity and decreased cost of ownership that suites offer.

At Curtice-Burns Foods, Inc. in Rochester, N.Y., we make our information systems decisions not on technical or emotional biases but by answering the question, "Is this the best business decision?" Because the food industry is extremely competitive, I'm thrilled when I can offer technology that will not only increase employee productivity but also require less support and be more cost-effective than other options.

We began selective user testing of Microsoft Corp.'s Office suite nine months ago, and started a formal rollout to corporate headquarters two months ago. We're converting a 45-person Novell, Inc. NetWare 3.12 LAN from DOS, Lotus Development Corp. 1-2-3 Version 3.1 and WordPerfect 5.1 from WordPerfect



to Windows for Workgroups using Microsoft's Office 4.2 or 4.3. We'll be rolling out suites to our di-

Suites, *page 122*

SOUND OFF!

Give me best of breed!

CONTINUED FROM PAGE 121

that I'm experienced in, then I can get my work done without wasting a lot of time. (Don't forget those other five jobs the boss would like for me to start.)

My philosophy is to choose the best there is — not the "easiest to use for all you morons." Unfortunately, many companies go for suites because they're right for the lowest common denominator of users.

I pick and choose my software based on years of experience, not on what someone else says is best for me. That's why I prefer to use Paradox even though Microsoft Corp.'s Office suite, including the Access database, is loaded on my machine.

Certainly, some of the office product suites have incorporated excellent packages. But the fact of the matter is, a suite consists of a handful of applications, not all of which are created equal. You may get a great word processing package and a good spreadsheet package, but then a sorry graphics application. Or you may get the best graphics package around but an incomprehensible spreadsheet and a useless word processor.

One reason companies may go to suites is the cost savings of having packages bundled for one price. But in reality, when you factor in the time wasted by business users who aren't working with the best tools possible or who have to be trained on a new package when they were perfectly happy with the one they had, those savings diminish. Not to mention that most people who use suites end up using only one or two of the applications. Any cost-effectiveness goes out the window.

As for the "seamless integration" of suites, that's not much of a plus, either. Most of the best-of-breed software packages comply with Microsoft's OLE and Dynamic Data Exchange (DDE), which, among other things, enable data to be collected and presented across applications.

Let's say I'm using Microsoft's Word for Windows. If I want to insert a database directly into my document, I don't need Microsoft's Access to do it. OLE and DDE let me just as easily insert a Paradox database, Microsoft's FoxPro, Borland's dBase or whatever database makes the most sense for me and my company.

"My philosophy is to choose the best [application] there is — not the 'easiest to use for all you morons.'"

I also have a program that uses Digital Communications Associates, Inc.'s Crosstalk for Windows communications application to retrieve information from a remote host. It is DDE-linked to Microsoft's Excel. Every five minutes, Crosstalk updates the numbers and Excel immediately recomputes all my charts and graphs. And I could do this as well with Datastorm Technologies, Inc.'s Procomm Plus for Windows or a number of other communications programs.

As long as you use a state-of-the-art software package that supports Windows embedding, OLE and DDE linking, it doesn't matter if it is part of a suite or not.

Using packages that I know get the job done best increases the quality of my work and reduces the time it takes me to do it.

You decide. Do you want to choose your software applications yourself or take whatever comes out of the box? ■

Give me suites!

CONTINUED FROM PAGE 121

visions across the country as business needs dictate.

Purchase price is the most obvious advantage suites offer. If you buy your suite at the competitive upgrade cost — and most people do — you will spend one-half or one-third of what you would on individual best-of-breed packages. Although these savings are significant, we've found that software's initial purchase price accounts for only about 20% of the cost of ownership. Support accounts for the remaining 80%. We believe suites will dramatically reduce support costs by eliminating application configuration and integration problems as well as problems associated with dealing with multiple vendors.

When it comes to integration, suites have a big advantage. Suite applications share a common look and feel. They share common spell checkers and grammar and charting tools. This makes end users more comfortable and translates directly into reduced training and support costs.

Best-of-breed proponents point to Microsoft's OLE as the glue for integrating applications. Unfortunately, with best-of-breed applications, you would probably end up with applications supporting different OLE versions.

In addition to large cost savings, better integration, simplified and cost-efficient support and reduced training time, suites offer the strength of a single-vendor relationship, ease of upgrade management and version control. When you upgrade your suite, you upgrade all applications and versions in it.

Our productivity increases have been impressive so far. One executive secretary who used to support four people under our DOS-based multivendor system now supports nine people using Office. The suite enables her to share applications by dragging and dropping between them, reducing the need to input redundant information. We used to go to an outside company to produce our presentations; now the secretary can create these in-house using Microsoft's PowerPoint. Microsoft's Mail lets her electronically route documents she used to copy, print and deliver manually.

Historically, discrepancies between a suite application and the market-leading application in a particular area were significant. Today, for 95% of business users, application features tend to be equitable from an overall functional standpoint.

Given this equity, "best of breed" becomes a misnomer. Office application choice has really become a support issue, and companies can no longer afford to support unlimited flavors of business applications.

As our computing environment gets more complex, including the move to a client/server setup, the ability to keep the desktop stable is of the utmost importance. Frankly, as systems professionals, we have enough to worry about without arguing about business applications.

Thanks to suites, users don't have to worry about their business applications and can focus on their business needs. I wish the answers to all systems problems were as clear cut. ■

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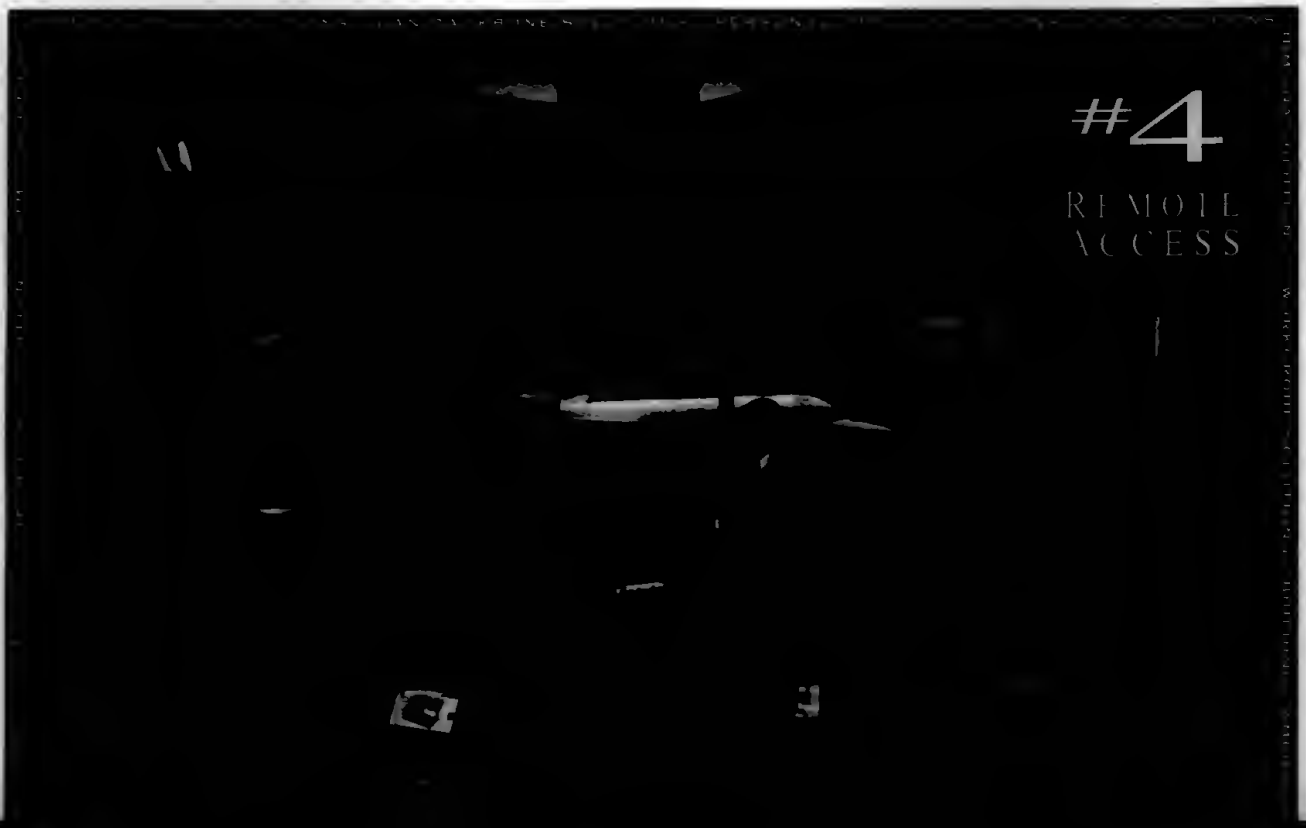

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Life on the Internet

By Alan Radding

Meet Christine Garland, lead technician on AT&T Bell Laboratories' Internet Gateway project, the company's access point and firewall for the Internet.

An engineer with a bachelor's and a master's degree in computer science from Purdue University, Garland joined the project two years ago after a stint doing networking software development for the company.

Garland is responsible for capacity and performance planning of the Internet Gateway and helps implement security for the project. In addition, she provides backup support to team members who help users with Internet access problems.

Recently she talked with Computerworld from her Columbus, Ohio, office about what it's like to be an Internet specialist.

Garland's week is shaping up to be very busy, varied and pretty typical. "We cut over to some new software this weekend, and two new administrators are starting today," she says.

In her role as Internet Gateway planner, Garland spends most of her time at her workstation. There, she wrestles with the technical issues of capacity planning, which involves modeling the anticipated traffic through the gateway. She also tweaks the design of the gateway architecture to boost capacity and accommodate new services. When *Computerworld* caught up with her, she was checking the new gateway software for potential problems.

In the course of a week, Garland interacts with a variety of people. She meets with business unit managers to gauge the amount of Internet access and service they'll require, such as gopher, Telnet and Mosaic.

She also works closely with the team's Internet administrators about 25% of the time. This week, in particular, she plans to work heavily with the new recruits. "I'll show them the environment, help them get a feel for what we have here," she says.

Garland travels to other business units and attends several conferences a year. Currently, she's scheduled to give a talk on Internet gateways and firewalls.

Through it all, she must continue work on gateway capacity. "We have a major new AT&T area starting to use the gateway, and I have to put in a plan for more capacity," she says.

From the standpoint of Internet skills, Garland has moved beyond what can be picked up in Internet classes and workshops. Much of her advanced training comes from huddling with experts, often AT&T research specialists. "Most of my learning is done on the job, and I stay in close touch with the technical community," she says.

But Garland isn't your average Internet specialist. The jobs of the Internet administrators under her tutelage are more typical of the Internet positions available today. AT&T administrators maintain the gateway machines, monitor activity, administer security, resolve problems and support individual users.

From all walks of life

The administrators come from a variety of backgrounds. Some have computer science degrees, and others are self-taught Unix programmers with extensive Internet experience. Basic skills include experience with Unix, familiarity with Internet security and knowledge of firewall technology.

While a good background in computer science and some practical experience in systems administration is helpful, "you don't need a computer science degree for the administrator's job," Garland says. "You really need to be self-motivated to learn."

In terms of salary, Garland says she is satisfied. AT&T pays well, she notes. As an Internet specialist, however, she says she is not paid better than other software engineers at the company.

Despite the good wages, experienced Internet people are hard to find. "We had trouble filling the two administrator slots. There is a high demand for people experienced with the Internet, Unix and security," she says.

In addition to technical skills, the need for people with patience and communications skills is growing as the Internet user population shifts. "Users who used the Internet in the past were very technical, which made things easier. That's changing now that we are seeing a much wider user base," she says. As a result, administrators are doing much more teaching and orientation, patiently explaining basic Internet concepts.

Although the number of host computers connected to the Internet is expected to swell to almost 45 million in five years, most companies are taking a wait-and-see attitude toward hiring permanent Internet specialists.

"Companies have not thought through their Internet strategies to the point where they're ready to implement hiring programs," says Jeff Kvasi, a researcher studying business use of the Internet at the Ernst & Young Center for Business Innovation in Boston.

According to Kvasi, companies are still trying to determine the Internet's role and typically hire experienced contractors for individual Internet projects, such as bringing up a World-Wide Web server or building a home page.

"At this point, companies are taking their people who already handle the network and giving them Internet responsibility," says William Grady, a partner at Roman International in Boston. "It is seen as an extension of existing jobs."

Garland reports to a technical manager who is responsible for the Internet Gateway project. He has a technical background and, at one time, was a member of the technical staff. He opted for a management track.

At this point, Garland's career can go either way. She hasn't decided which way to go, and because she's happy at her job for now, she's in no hurry to decide.

People who are most successful in this area approach their work as more than a job, she says. "The Internet is not just work. It's a hobby, a big part of their lives, and they're having fun."

Clearly, Garland is speaking for herself as well. ■

Radding is a freelance writer in Newton, Mass.

Never at rest, Christine Garland checks E-mail messages from home with her cat Lancelot

With Tim Thompson, NetNews service engineer, Garland looks for potential problems with one of the services offered through the Internet gateway

Garland and Matt Curtis, AT&T gateway postmaster

Garland checks the specifications for an upgrade of gateway equipment with systems engineer Mike Cash

Garland before a presentation on the architecture for AT&T's Internet access

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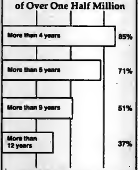

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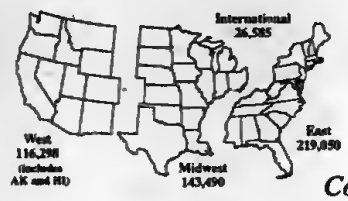

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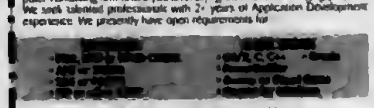

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- Excellent writing and speaking skills. Demonstrated ability to craft technical reports and proposals.
- A minimum of 2 to 4 years experience managing DEC VAX and Alpha computer systems running VMS, OpenVMS, and OSF/1 operating systems.
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Blue Cross and Blue Shield of Alabama has a rewarding opportunity for a Systems Programmer. This position requires 3 to 4 years of application programming experience. Experience with AIX and PIC is also required, as well as a baccalaureate degree. Experience in a large mainframe communications environment is desirable.

We are located south of Birmingham in the Riverchase community. Blue Cross offers an excellent total compensation package including:

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An Independent Licensee of the Blue Cross and Blue Shield Association

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ATTN: EMPLOYMENT/SYSTEMS PROGRAMMER EEO/AA

InterSec Research is a leader in the international investment industry with offices around the world. Technological enhancements to our main product line have created opportunities within our systems team in our Stamford CT headquarters.

Position:

Design and development of programs written in C and embedded SQL on a SUN platform. Direct interface with users to create Windows PC applications to support clients around the world.

Requirements:

A programmer analyst with 1-5 years hands-on experience in C, UNIX, embedded SQL or relational database applications. In addition, at least some of the following: experience building Windows applications, knowledge of communications, systems administration experience including support of Novell net work, training in setting up PC hardware and assisting users.

Fax or send resume to: **InterSec Research Corp., Attn: Manager, Systems Dept., 88 Greenhouse Road, Stamford, CT 06802 Fax: (203) 348-1906.**

No recruiting firms please

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STEP Consulting is expanding and needs experienced PowerBuilder professionals. **STEP** focuses on providing Client/Server solutions to our clients using PowerBuilder. Our advanced methods and techniques have been successful at increasing quality while decreasing delivery time.

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Product Development Manager (Proprietary Software) Manage & supervise design & development of proprietary software & systems for national/international marketing responsible for applications & system development with Datafles relational database models using SQL, software maintenance with SCCS (Source Code Control System). C block structured programming & C++ Object Oriented Programming. YACC Windows 3 & 4 GLs develop graphical user interfaces with CURSES & Windows on DOS & UNIX platforms, coordinate activities of other staff involved in software development oversee preparation of technical & user documentation assist management with plan proposals deadlines & expenditures monitoring software/hardware operation evaluation review & assist with vendor contract negotiations coordinate with marketing department for delivery & exporting schedules. $42,000/yr MSCS & 1 year exp. in job offer or as Software Engineer. Systems [illegible] B.S. & 2 yrs exp. accepted in lieu of M.S. & 1 yr. exp. Background/experience must include specific technical skills as noted for software design & development. Submit resume to the Job Service of FL, 701 SW 27th Ave., RM 47, Miami, FL 33135-3014. Job Order #FL-1224702

Software Development Engineer Provide services to customers in development of communication applications, define customer specifications & systems requirements to construct & implement software packages, design, program & implement software in AS/400 environment with CODE/400 Exterminate, DFU (Data File Utility), RPG/400, CL & CASE tools; develop databases for maintaining banking & telecommunications accounts worldwide in PS/2 environment; oversee integration, programming, & testing of new software, line-tune mainframe applications & provide needed technical support. $46,000/yr 40 hrs/wk. M-F U.S. or foreign equivalent B.S. in Computer Engineering or Electrical Engineering & 2 yrs exp. in job offer or as Software Consultant, Systems Engineer, or Systems Analyst. Experience/background should include use of specific noted technical skills. Submit resume to the GA Dept of Labor, 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909 or the nearest Dept. of Labor Field Service Office. Job Order #GA5843190

SYSTEMS ANALYST to provide highly specialized software development and consulting services to analyze requirements, design, develop implement and support business information systems for financial and related applications using RDBMS, GUI, and Object Oriented technologies, develop systems in client/server environment using Oracle, C, C++, UNIX, DOS, Windows, Imaging, and Parallel Processing, to provide client training and support. Require US or foreign equivalent of BS in Computer Science or any field of Engineering or Science. At least two years of experience in prescribed responsibilities and listed skills. Job requires travel within the US to install and implement systems. Salary $42,000 per year 40 hr/week 8:00 am to 5:00 pm, M-F. Submit resume to Georgia Department of Labor, Job Order# GA 5842975, 1535 Atkinson Road, Lawrenceville GA 30243-5601 or the nearest Department of Labor Field Service Office

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Systems Analyst $45K/yr 8am-5pm, 40hr/wk. Position available for Systems Analyst for analysis dsgn dvlp maintenance qlty assurance, unit & syst level testing implementation & documentation on PC 286/386 DOS & UNIX BASE HP3000, HP9000 Systs using CASE TOOLS for analysis & dsgn. Must have Bech or equivalent in Meth Acctg, Comp Sc, Comp Engg or related field. Must have 2 yrs exp in job off'd. Req d 2 yrs exp should include wrking on PC 286/386 HP3000, HP9000 systs using CASE TOOLS for DOS & UNIX BASE for analysis & dsgn. Job opportunity in Atlanta GA. Applicant should send resume to GA DOL, Job Order # GA 5841578, 2943 N. Druid Hills Rd. Atlanta GA 30329-3903 or the nearest Dept of Labor Field Service office. Must have proof of legal auth to work permanently in U.S. EEO/AA Employer

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Join a winning team and be part of one of the fastest growing managed care companies in the country. To sustain our stellar growth and maintain a competitive edge, Oxford Health Plans is making significant investments in new technologies. We have numerous opportunities for talented Information Systems professionals in enterprise-wide client server computing, document imaging, text retrieval, and expert systems.

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GROWTH

Wal-Mart, the nation's leading retailer with 1994 sales of $83 billion, currently operates over 2,000 stores in the U.S. and international trade areas. Planned growth includes the addition of over 150 new stores annually and projected sales of $100 billion by the year 1996.

OPPORTUNITY

Due to our continued expansion plans, Wal-Mart provides tremendous opportunity for Information Systems professionals seeking stable career opportunities in a high energy, challenging environment. Practical experience in retail, manufacturing, distribution or replenishment is helpful.

THE NATURAL STATE

All positions are centralized in Wal-Mart's Corporate Offices located in Bentonville, Arkansas, near the beautiful Ozark Mountains, Beaver Lake, and the University of Arkansas. In Northwest Arkansas you will discover a lifestyle that combines urban amenities, easy commuting and one of the lowest costs of living in the nation. It's a wonderful place to raise a family and we ought to know. Wal-Mart's corporate family is one of the biggest and best in the nation.

We are seeking Applications Programmers/Analysts, Systems Programmers/Analysts and Communications Engineers with a 4-year degree or equivalent experience, plus a minimum of two years work experience in one of the following areas:

APPLICATIONS DEVELOPMENT	Requires Unix, C or C++. Informix 4GL/SQL
DATABASE ADMINISTRATOR	DBA experience in IMS, DB2, Informix On-Line or other RDBMS on Unix and Teradata
POINT OF SALE DEVELOPERS	Requires C, Basic and PC experience. Unix and 4690 experience is a plus
WORK STATION DEVELOPMENT	Requires Dos/Windows, C or C++, Visual Basic - Client Server architecture experience preferred. Programming skills in MBP Cobol and Bitrieve
SYSTEMS PROGRAMMERS	Requires Unix/OS, Programming in C, Shell Script and Distributed Networks - C++ and X Windows or X.400 and X.500 is a plus
COMMUNICATIONS ENGINEERS	Requires TCP/IP, Routers, LAN troubleshooting, and Unix experience. Multi-plexers, T1/56 experience is a plus
IBM MAINFRAME	Programming skills in Cobol, CICS, IMS, JCL, and DB2. PC Workstation experience and/or Unix/C is a plus
DATA ANALYSTS	Performs conceptual and logical data analysis, design and modeling using I.E. methodology
SYSTEMS ENGINEERS	Requires experience with multiple Novell Servers operating 3.1 and 4.x versions. Experience should include Novell NFS, TCP/IP and IPX/SPX experience

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Wal-Mart Home Office
Information Systems Division Recruiting
702 SW 8th Street, Bentonville, AR 72716
501-273-6879 FAX

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PC Tech. Support Mgr Manage 2nd level OS support for PC Company.
Communication Products Help develop/select communication products for laptop products.
QA Multiple positions requiring strong hardware or software QA exp.
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Salaries to $75,000

DBA 1+ year Oracle, DB2, IDMS, ADABAS or SYBASE.
System Prog. 3+yrs MVS, DB2, IMS, VSE/VM or VTAM.
P/A Any combination of CICS, DB2, IDMS, ADABAS or Oracle.
AS/400 P/A RPG or Cobol. SYNON a plus.
EDP Auditors Degree, CISA or CPA a plus.
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UNITED NATIONS
HIGH COMMISSIONER FOR REFUGEES

INFORMATION SYSTEMS OFFICERS - ANALYSTS/PROGRAMMERS

Information and Communications Systems Services

The Information and Communications Systems Section of the United Nations High Commissioner for Refugees (UNHCR) has a number of Geneva based posts for experienced candidates to work on a variety of platforms encompassing IBM mainframe (MVS) and PC/LAN (Novell). The selected candidates will have the opportunity to develop and support new and existing applications of an administrative nature running at HQ and in Field Offices. A university degree and a successful participation in all aspects of specification, development and implementation of computer based systems using structured design/data analysis and planning methodology for a minimum of 4-6 years are required (*For Post 228046: 2-3 years). Fluency in English essential, working knowledge of French desirable.

1. **Analyst-Programmer** (Post 228044) Thorough and recent knowledge of Dun & Bradstreet Millenium environment under MVS/CICS with emphasis on M SDT, M VP, GL-M as well as PL/1 programming and MVS JCL. Experience with Financial type of applications desirable.
2. **Analyst-Programmer** (Post 228009) In-depth knowledge of MVS mainframe environment including PL/1, TSO, SPF, VSAM. Experience with mainframe databases, preferably Infodata Inquire/Text to work on Procurement and Financial applications.
3. **Analyst-Programmer** (Post 228047) Excellent knowledge of PCs (MS/DOS) and LAN development tools particularly MAGIC and FoxPro with Power Tools. Demonstrated ability in wide ranging business systems, including Accounting, Budget, and Human Resources applications.
4. **Analyst-Programmer** (Post 228048) Thorough knowledge of MS Access 2.0, FoxPro, Visual Basic 3.0, Windows API and SQL. Applications cover Finance, MIS systems and Communications based systems.
5. **Associate Analyst-Programmer** (*Post 228046) Technical and operational support and maintenance of EMail/EDI facilities: requires experience with Novell Groupwise (formerly WP Office) covering installation, administration, maintenance, support, gateways, DOS and Windows clients. Programming experience in Basic, C or other similar languages using structured programming techniques.

UNHCR offers competitive international salaries, benefits and allowances.

APPLICATIONS: Full curriculum vitae, including personal biodata, should be sent to the Chief, RCMS (REF. OP), UNHCR, Case Postale 2500, 1211 Geneva 2 Depot, Switzerland. Fax No. (+41 22) 739 8475. Applications must be received by 12 May 1995.

UNHCR encourages qualified women to apply. Because of the number of applications expected, acknowledgements will only be sent to short-listed candidates under serious consideration.

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◆ AS/400 RPG	Visual Basic, Sybase
◆ cc:Mail Architect	Windows Architecture—Unix
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◆ SAS, MVS or VMS	**Project Managers**
◆ Oracle, SQL+, SQL Reportwriter	Product Release Engineering
◆ Oracle Financials	O-O Distributed Systems
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We Are New River Technology Corporation!

Our firm is based on the simple premise that our customers and Our Employees should be able to satisfy their goals and objectives through and with our organization. New River is committed to being a virtual corporation providing our clients comprehensive services including Total Systems Integration, Enterprise Wide Program Management and Contract Technical Services to name a few. We at New River realize that to meet this vision we must attract and retain exceptional industry talent. If you possess exceptional talent in the following areas we would like to talk:

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- Object oriented designers/programmers
- Oracle or SAP project managers & developers
- Standards & Methods specialist (client server environment preferred)
- Oracle, Sybase, Informix developers
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New River Technology Corporation
1215 Jones Franklin Road, Suite 103
Raleigh, N.C. 27606

Tanimura & Antle, Inc., a food production corporation based in Salinas, California, is expanding its MIS department, and is accepting resumes for this position:

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Experience is required in the AS/400 environment. Must be experienced in use of RPG/400. Ability to communicate well with all users is a necessity. Looking for that person who accepts challenges, performs well in a fast paced department and desires to be in a growing environment. Send resume in confidence to:

Tanimura & Antle, Inc.
Attn: MIS Dept, PO Box 4070, Salinas, CA 93912

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Maybe you work on the client/server side of the technology business. Or perhaps you prefer to work with mainframes. You may even be looking for a project management role. Whatever side of the business you're on, CTG may have room for you. With more than 65 offices in North America and Europe, CTG is a leading provider of innovative information technology services. Opportunities may currently be available from coast to coast and everywhere in between. Consider these openings in our Mid-Atlantic region:

BALTIMORE: PowerBuilder • COBOL II • DB2 • IMS DB/DC • Oracle • Visual Basic • OS2 • CICS **Contact: William Ely at 410-837-3700. Fax: 410-837-6731.**

CHARLOTTE: AS/400 RPG • ADABAS/Natural • Visual Basic • APS • COBOL, CICS, DB2 of IMS • Data Modelers • Smalltalk • Lotus Notes • ADW/IEF/CASE TOOLS • Banking Business Analysts • Oracle • Oracle DBA **Contact: Tom Dailey at 704-527-6730. Fax: 704-527-1247.**

GREENVILLE: IMS/DB2 • CICS • Oracle SQL Forms • IBM Mainframe • AS/400 • PC • Client/Server **Contact: Chris Norman at 800-851-6577. Fax: 803-297-5389.**

LANCASTER/HARRISBURG: PowerBuilder • Visual Basic • IMS DB/DC • Oracle • CICS/DB2/CSP • Sybase • AS400/COBOL • Lotus Notes • HP 3000/Image **Contact: Manny Hawkins at 800-851-6577 Ext. 128. Fax: 800-847-9862.**

PHILADELPHIA: Visual Basic • COBOL/Assembler • MSA • Novell • ADABAS/Natural • COBOL, CICS, DB2 • CICS • IMS • Microfocus COBOL • EZTRIEVE • Clipper • Help Desk • UNIX Syst. Admin. **Contact: Don DeGraff at 800-891-7270. Fax: 610-891-7206.**

WASHINGTON, D.C.: Oracle • Sybase • PowerBuilder • Visual Basic • MS Access • UNIX Syst. Admin. • UNIX/AIX, C, RDBs • DB2, CICS **Contact: Kathy Folsom at 800-851-6577 Ext. 134. Fax: 800-847-9862.**

GREENSBORO: WINSTON-SALEM: DB2 • Visual Basic • CICS • IMS • COBOL II • Sybase • AS/400, RPG • CINCOM SUPRA • MANTIS • Easytrieve **Contact: Chris Granger at 910-724-4441. Fax: 910-724-6411.**

RALEIGH: C, UNIX • COBOL, CICS, DB2 • AS/400 RPG • Visual Basic • Visual C++ • Sybase, PowerBuilder • Access • VAX, Fortran, RDB, VX Works • Novell Networking • C++, OOP • C, DOS, Windows • HP3000, Powerhouse **Contact: Kelly Klaus at 1-800-851-6577 Ext. 125. Fax: 800-847-9862.**

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Midwest Region	Ph: 800-214-2820 / Fax: 800-214-2720
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South Region	Ph: 800-788-2159 / Fax: 800-345-5362
West Region	Ph: 800-345-7782 / Fax: 800-549-1636
Northeast Region	Ph: 800-272-5852 / Fax: 800-586-5274

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SYSTEMS ANALYST required. Develop testscripts, perform analysis & determine application compatibility on DOS, Windows & OS/2 platforms using expertise with PCMCIA & ISA card configurations, Pentium processors, Microchannel Architecture & development of GUI's & test cases for multimedia systems. Validate testing of network communications using TCP/IP & X.25 protocols. High speed LAN Server tools. C/C++. Develop algorithms to simulate & optimize the testing procedures/system response. Masters Degree or its Equivalent required in Computer Intensive Curriculum plus 6 months experience in job duties described above. University level project experience may be used to satisfy the experience requirements. Must have proof of legal authority to work in the U.S. Salary $33,000.00/year for a 40 hour work week. Send resume (must include social security number) to: Job Service, 700 Wade Avenue, P.O. Box 27227, Raleigh, NC 27611. Refer to J.O. Number NC7246577. DOT code 030.167-014

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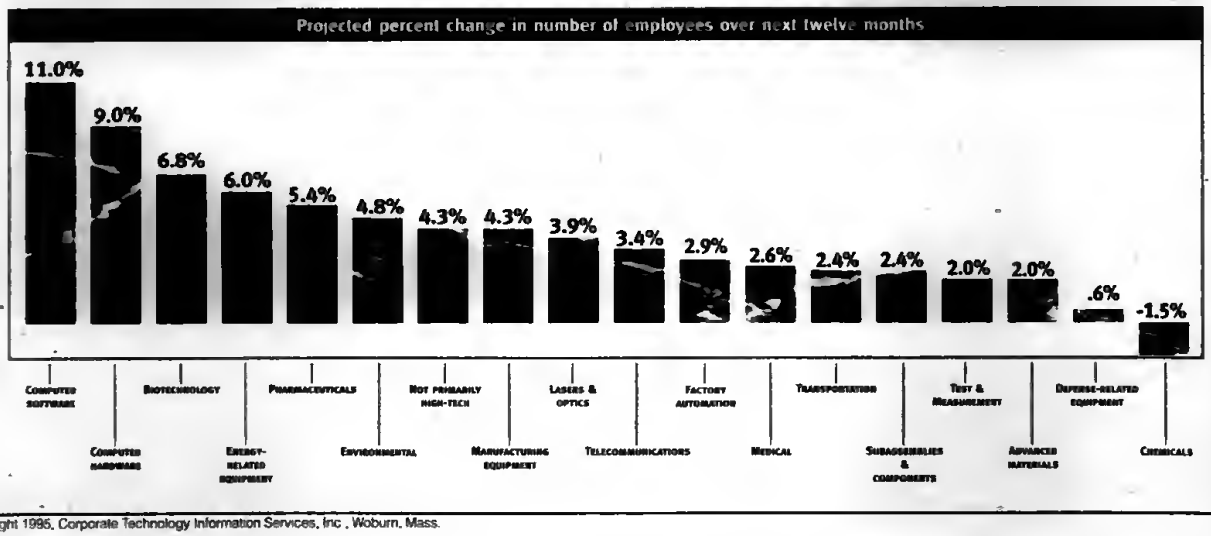

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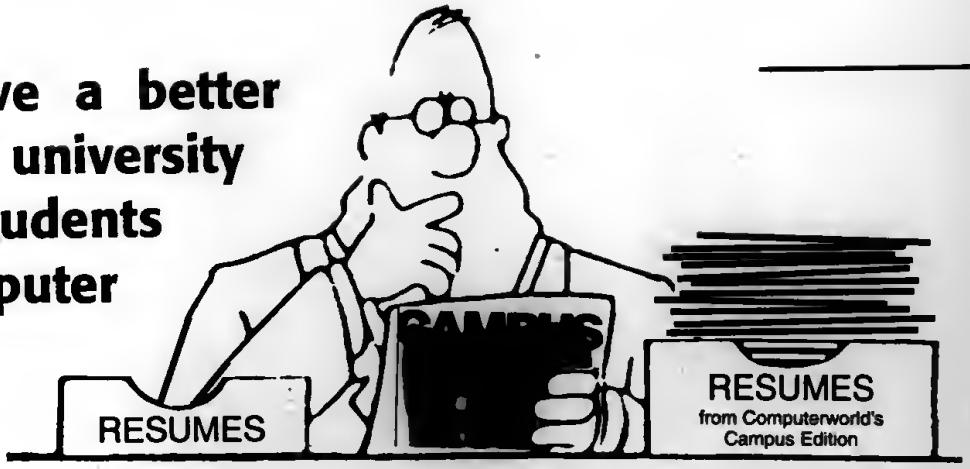

Computerworld's eighth annual Campus Recruitment Edition

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Jason K. Whitehair
Recruiting Manager/Systems Engineering
MCI Telecommunications Corporation

Having just celebrated its 25th anniversary and exceeding $10.6 billion in revenue, MCI is not only the nation's second largest long-distance provider, but also the world's fifth largest carrier of international traffic. Because the Systems Engineering Division plays a strategic role in shaping MCI's technological future, Recruiting Manager Jason Whitehair relies heavily on *Computerworld* to help recruit leading-edge professionals.

"Dedicated to delivering premier customer service and the highest quality products, Systems Engineering provides systems and software development and support to all of MCI's domestic and international voice and data businesses. Everything from message processing and commercial billing ... to network management and control ... to MCI Mail ... and more. Take our Friends & Family program, for example. Our software applications are what keep track of millions of 'calling circles' and generate customized bills.

"Not limited to any one platform, we utilize the platform best suited to deliver each customer service. So I'm always looking to recruit systems engineers with at least five to seven years of experience in a wide range of technical environments. Because *Computerworld* is one of the best trade publications for staying on technology's leading edge, its readers are the professionals we're generally looking to recruit. When it comes to recruitment advertising, *Computerworld* delivers a much higher ratio of qualified candidates than daily newspapers or nontechnical publications.

"The vast majority of resumes generated by our *Computerworld* recruitment advertisements are from very high calibre candidates. We're typically able to use 350 out of every 400 resumes we receive -- and that's a hit rate of nearly 90%. In fact, from some 600 responses generated by a recent *Computerworld* recruitment advertisement, we've already hired about 50 professionals who were direct replies -- and we're still hiring from that advertisement. For a single advertising investment, we've more than gotten our money's worth.

"After Systems Engineering moved from Washington, D.C. to Colorado Springs back in 1991, our *Computerworld* recruitment advertising has been instrumental in helping us hire more engineers than usual -- and hire them fast. And, since I'm still seeing activity as a result of a recruitment advertisement we ran five months ago, I know we get sustainable impact with *Computerworld*.

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And you'll leave with valuable knowledge and documentation. Your attendance at the 1995 Corporate Technical Recruiting Conference entitles you to your personal copy of the complete **1995 Corporate Technical Recruiting Conference Proceedings**, a professionally published volume containing papers presented at the conference. This special book, a $49 value when purchased alone, is provided to each attendee as a part of their conference registration and will become your own reference tool into the future. (To order your copy of the comprehensive 1994 Conference Proceedings for $49 plus $3.50 for shipping and handling, call the conference hotline at 1-800-488-9204.)

There's more. You'll not only network with your peers, you'll also compare valuable notes with the very Information Systems educators who are preparing your future recruits for employment. Because top Information Systems educators from campuses nationwide will be simultaneously attending the second annual Worldwide Conference on Information Systems Education, you'll be able to attend special joint sessions that are specifically designed to build immediate, productive cooperation between industry and academia.

WORLDWIDE CONFERENCE ON INFORMATION SYSTEMS EDUCATION EDSIG

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Ann Alper
Editor
Computerworld's Client/Server Journal

TRACK 3: Why Can't I Find the Skills I Need When I Need Them?

Advances in technology have a direct relationship with the amount of talent available to you. The newer the technology, the fewer the experts available. In this session, learn about this timeless topic and how to assign realistic expectations to your recruiting efforts and resources.

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President
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TRACK 4: Candidate Selection

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TRACK 5: Sourcing Techniques

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TRACK 7: Educator/Recruiter Summit

What's the contemporary view of I.S. education, especially as it relates to how recruiters must rely on the the I.S. talent supply that emerges every year from America's campuses? This summit with I.S. educators who will simultaneously be attending the Worldwide Conference on Information Systems Education (WISE) will focus with your discussions on how to maximize your college relations and cooperative education efforts.

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Slow but sure

Companies ease into 32-bit upgrades, spread out costs

BY CHERYL GERBER

What managers dread the most about upgrading to a 32-bit desktop operating system is the cost and time of training. By comparison, hardware and software upgrades are manageable.

Grinnell Mutual Reinsurance Co. plans to install Microsoft Corp.'s Windows 95 on all of its desktops when it is released late this summer. And training will represent the highest cost of the upgrade.

"Some people are still on terminals or DOS, and Windows 95 will look completely different to them," says Gordon Bosse, operating and network systems architect at the Grinnell, Iowa, company. "Time is money. The training will be the cost of time taken away from day-to-day operations."

Training costs can be the most difficult expense to predict and, therefore, budget accurately. "It's the cost of the unknown, the learning cost, that will cause your help desk manager's call frequency to rise. It's the cost of newness, the cost of change," says Jonathan Eunice, research director at Illuminata, a technology assessment company in Hollis, N.H.

High price to pay

Even predictable training costs seem exorbitant to many information systems managers. "We'll have to retrain our staff on Windows 95. That'll cost maybe $500 per user times 75 users. It'll be enormous, and that's not even the cost of the software upgrade," says an assistant IS director at a company in Guilderland, N.Y., who requested anonymity. "It's the cost that's scaring us away. That's why we'll hesitate to upgrade right away."

A recent study on training and education from International Data Corp. in Framingham, Mass., predicts that Windows 95 migration will cost users more than $400 million by the end of next year. The study also says that the increased complexity of 32-bit desktop software will put a strain on corporate and third-party help desks.

To control the cost of software upgrades, Grinnell will use Microsoft's Open Licensing Pack, which provides upgrades on all existing licenses for two years. "It's a cheaper way to put a lot of licenses in place," says Francine Graves, Grinnell's group manager of office systems.

Some companies have managed the cost of hardware upgrades by planning ahead to spread out the various costs. For example, Manesh Patel, IS manager at Elantec, Inc., purchased 90-MHz Pentium-based PCs with 16M bytes of RAM and 17-in. monitors as the standard hardware configuration for the near-future desktop.

"We waited just a little while to make it cost-effective, and then we upgraded," Patel says. "When the prices on 17-in. monitors came down a year ago, we bought them with the expectation that users would need the larger monitors for multitasking on the desktop."

Elantec, a semiconductor manufacturer in Milpitas, Calif., spent a little extra initially to prevent its IS shop from absorbing the upgrade costs all at once.

Down the road

Because Patel has nearly completed his hardware upgrades, those costs will be minimal later on. The larger costs will be training and software upgrades from 16-bit Windows applications to 32-bit Windows applications, he says. Elantec will not upgrade its Office application until Microsoft releases a 32-bit version, he says.

"We'll spread the cost of the applications upgrade out over time by not upgrading all of them right away. We'll upgrade the operating system to 32-bit now but run existing 16-bit applications with it for a while," Patel says. "If we don't see a real advantage in speed and functionality over the current system, then we'll hold off upgrading for a while and review the whole thing again."

Even those in the computer industry who can rely on their technical staffs say the cost of training along with software and hardware upgrades seems high.

"Our technical staff can teach themselves. But typical users of standard software will need extensive training on Windows 95, which will cost more than the hardware upgrade," says Nick Napp, marketing manager at GTX Corp., a software developer in Phoenix. "If we had to pay for training as well as hardware and software upgrades, it would be extremely difficult to make a business case for such a prohibitive cost."

Perhaps that's why even tried-and-true Microsoft shops such as Elantec are taking a cautious, show-me-first approach to the 32-bit desktop upgrade — even if it is Microsoft's. ■

Gerber is a freelance writer in Kingston, N.Y.

Big winners

The high cost of moving to a 32-bit operating system on the desktop will be a boon to vendors. Demand for Windows 95 training in the U.S. will create more than $130 million in vendor revenue this year, growing to almost $800 million by 1998, according to International Data Corp.

COST SNAPSHOT

COMPANY: GTX Corp., a computer-aided design desktop developer in Phoenix with approximately $5 million in 1994 revenue.

UPGRADE: Purchased a 90-MHz Pentium machine with 64M bytes of RAM and one with 32M bytes of RAM; upgraded an existing machine to 32M bytes of RAM.

COSTS: $22,500 for hardware, $4,000 for software.

"It's inevitable that you are always going to have to upgrade hardware and software, but it has accelerated greatly – to twice what we would normally spend. This has hit us with $20,000 bills that we aren't used to, and that's definitely a disadvantage," says Nick Napp, marketing manager.

COMPANY: Elantec, Inc., a semiconductor manufacturer in Milpitas, Calif.

UPGRADE: Ten 486-based 33-MHz machines with 8M bytes of RAM to 66- or 100-MHz machines with 16M bytes of RAM. This represents 10% of the entire upgrade.

COSTS: $200 per user for a processor upgrade of 33 to 66 MHz, $300 per user for a RAM upgrade from 8M to 16M bytes. As a result, hardware upgrades cost about $500 per user.

"We'll upgrade the operating system to 32-bit now but run existing 16-bit applications with it for a while. If we don't see a real advantage in speed and functionality over the current system, then we'll hold off upgrading for a while and review the whole thing again," says Manesh Patel, IS manager.

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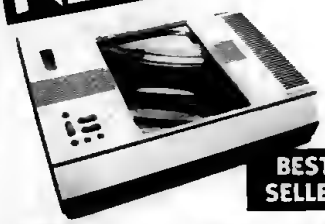

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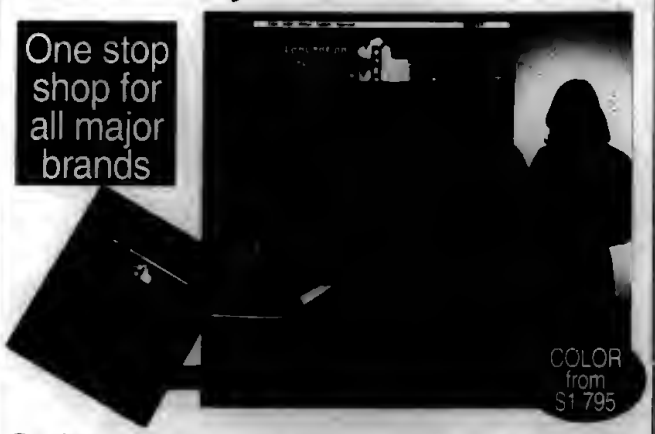

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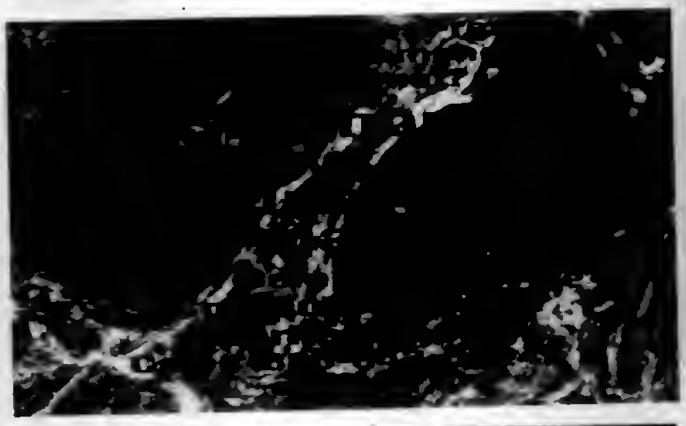

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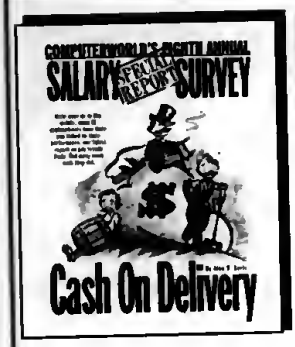

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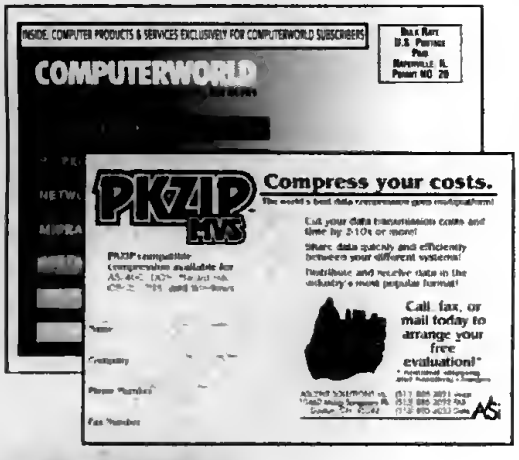

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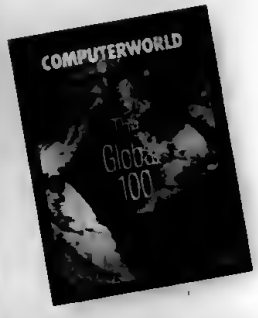

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Percent

Gainers		Losers	
Hogan Systems Inc.	43.8	NetFrame	-16.7
Data Switch Corp	21.6	Cambex Corp.	-31.6
Cray Computer	20.0	Software Publishing Corp.	-13.3
Micrografx Inc.	18.4	Penril DataComm Networks	-12.5
PictureTel Corp (H)	14.7	Banyan Systems Inc.	-11.8
Compaq Computer Corp.	11.4	Bay Networks Inc.	-11.6
MathSoft	10.9	Softkey International Inc.	-11.4
Gateway 2000 Inc.	10.8	Network General	-11.2

Dollar

Gainers		Losers	
PictureTel Corp. (H)	3.75	Bay Networks Inc.	-4.44
IBM (H)	5.13	Hyperion Software Corp	-4.50
Xerox Corp.	4.00	Progress Software Corp.	-4.00
ITT Corp	3.88	Autodesk Inc.	-3.88
Xilinx (H)	3.88	3COM Corp.	-3.63
Compaq Computer Corp.	3.75	Zilog Inc.	-3.50
Dell Computer Corp. (H)	3.13	Softkey International Inc	-3.13
Hogan Systems Inc.	2.63	Chipcom Corp	-3.13

The market moved upward last week on strong earnings reports, including ones on technology stocks such as IBM and Compaq Computer Corp. Semiconductor shares dropped, though, on similarly strong results.

[redacted]

IPOs come marching in

More information technology companies are jumping into Wall Street this year, continuing the rise of initial public offerings (IPO) that began at the end of 1994. Few companies went the IPO route through much of last year.

Twenty-eight technology companies went public in the first quarter, according to Technologic Partners, Inc. in New York. The biggest jump following an IPO came from distributed systems management software vendor **Tivoli Systems, Inc. (TIVS)**. Tivoli was riding six straight profitable quarters before the IPO. Other standout stocks are semiconductor maker **Integrated Silicon Solution, Inc. (ISSI)** and help desk software developer **Remedy Corp. (RMDY)**.

Though IPOs started out slow at the beginning of the quarter, by March, strong market conditions gave companies another reason to try their chances.

— Tim Ouellette

IPOs flood Wall Street

All sectors contributed to the number of IPOs during the first quarter*

Company	Ticker	IPO date	IPO price	Price 4/20
Daisytek International Corp	DZTK	1/26	15	21¼
Integrated Silicon Solution, Inc	ISSI	2/2	13	32⅝
Concentra Corp	CTRA	2/9	12	12¾
General Magic, Inc	GMGC	2/9	14	12⅝
Information Storage Devices	ISDI	2/9	15	24
Oak Technology, Inc.	OAKT	2/13	14	24
Globalstar Telecommunications	GSTRF	2/14	12	13¾
TGV Software, Inc	TGVI	2/28	16	19⅝
Viasoft, Inc	VIAS	3/1	8	8⅝
Software Artistry, Inc	SWRT	3/2	14	24¾
P-COM, Inc	PCMS	3/3	15	17¾
Renaissance Solutions, Inc	RENS	3/4	13	11½
DSP Communications, Inc	DSPC	3/7	10	12⅞
Tivoli Systems, Inc	TIVS	3/10	14	38
Palmer Wireless, Inc	PWIR	3/14	14½	17
Remedy Corp	RMDY	3/17	23	34¾
Datastream Systems, Inc	DTSM	3/29	15	23¾
Periphonics Corp	PERI	3/31	14	15⅞

*Only deals valued at $50M or more are listed

Source: Technologic Parters, Inc., New York

April 21 Stock Ticker

Exch	52-Week Range			Apr. 21 1 pm	Wk Net Change	Wk Pct Change
Communications and Network Services						
OTC	59.75	20.13	3COM Corp.	53.38	3.63	6.4
NYS	44.75	37.00	Ameritech Corp. (H)	44.00	-0.50	-0.8
NYS	57.13	47.25	AT&T	49.13	-2.11	-4.1
OTC	19.75	12.75	Banyan Systems Inc.	14.00	1.88	-11.8
OTC	39.50	18.63	Bay Networks Inc.	33.94	-4.44	-11.6
NYS	58.38	48.38	Bell Atlantic Corp	53.75	-0.88	-3.6
NYS	63.50	50.50	BellSouth Corp	60.75	-0.50	-1.4
NYS	22.25	10.00	Bolt, Beranek & Newman	18.50	1.00	-5.2
OTC	19.75	9.00	Brooktrout Technology	16.50	-0.50	-3.0
NYS	52.88	33.00	Cabletron Systems	46.88	-1.13	2.3
OTC	35.75	10.00	Centigram Communications	14.00	1.38	-8.9
OTC	50.50	21.00	Chipcom Corp	29.63	-3.13	-9.5
OTC	41.13	18.75	Cisco Systems Inc. (H)	38.88	-1.13	-2.8
OTC	13.63	6.13	Compression Labs Inc	10.75	-0.50	-4.4
OTC	9.38	5.13	Computer Network Tech.	8.25	-0.63	-7.0
OTC	34.50	7.50	CrossComm	10.63	0.38	3.7
OTC	4.13	2.00	Data Switch Corp	3.88	0.69	21.6
OTC	39.00	17.88	DSC Communications	35.13	-1.00	-2.8
OTC	41.75	10.00	FORE Systems Inc	30.38	-2.75	-8.3
NYS	35.88	10.25	General DataComm Inds.	11.75	0.25	2.2
NYS	34.88	29.50	GTE Corp.	34.13	-0.50	-1.4
NYS	104.88	77.00	ITT Corp.	104.88	3.88	3.8
OTC	25.88	17.25	MCI Communications Corp	22.25	0.25	1.1
OTC	15.75	5.88	MICOM Communications Corp	7.50	0.13	1.7
OTC	12.61	4.88	Microcom Inc.	11.00	-0.31	-2.8
OTC	10.50	4.00	Netrix Corp	7.13	-0.13	1.7
OTC	7.38	3.75	Network Computing Devices	6.50	-0.75	-10.5
NYS	27.88	7.38	Network Equipment Tech.	25.63	0.38	1.6
OTC	30.63	14.00	Network General	26.38	3.08	11.3
NYS	55.63	26.50	Newbridge Networks Corp	31.88	0.38	1.2
NYS	41.00	27.13	Northern Telecom Ltd. (H)	38.88	-1.13	2.9
OTC	22.28	11.38	Novell Inc. (H)	20.63	-0.50	-2.4
NYS	41.50	35.38	Nynex Corp	40.25	-0.25	-0.6
OTC	24.25	15.50	Octel Communications Corp	19.75	0.19	1.0
OTC	40.00	12.00	Optical Data Systems Inc. (H)	37.00	0.75	2.0
OTC	6.00	2.13	Penril DataComm Networks	3.50	-0.50	-12.5
OTC	35.00	10.25	PictureTel Corp (H)	45.00	5.75	14.6
OTC	8.11	2.13	Proteon Inc	6.00	0.33	2.1
OTC	9.50	2.75	Racotek Inc.	5.38	-0.31	-5.5
OTC	8.13	3.50	Retix	4.00	-0.50	-11.1
NYS	24.88	13.69	Scientific Atlanta Inc	22.50	-1.13	4.8
NYS	44.25	30.50	Southwestern Bell Corp	43.25	0.00	0.0
NYS	40.13	25.88	Sprint Corp	31.38	-0.75	-2.3
OTC	31.63	13.38	Standard Microsystems Corp	16.38	-0.13	0.8
OTC	47.00	9.88	StrataCom Inc	38.00	-0.50	-1.3
OTC	11.38	3.88	Telebit Corp	6.13	-0.56	-8.4
OTC	72.00	24.00	US Robotics	67.50	-2.25	3.3
NYS	43.61	34.63	US West Inc.	40.63	-1.50	3.6
OTC	23.50	10.63	Xircom (H)	10.75	-0.11	2.9
OTC	28.00	8.00	Xylogics Inc.	19.00	1.00	5.6
PCs and Workstations						
OTC	6.13	3.50	Advanced Logic Research	5.13	0.13	2.5
OTC	46.00	24.63	Apple Computer Inc.	38.81	0.56	1.5
OTC	20.00	10.38	AST Research Inc.	10.94	-0.44	-2.5
NYS	44.38	29.50	Compaq Computer Corp.	36.75	3.75	11.4
OTC	48.88	21.50	Dell Computer Corp. (H)	48.88	3.11	-6.8
OTC	25.75	9.25	Gateway 2000 Inc.	20.38	2.00	10.8
NYS	64.88	35.94	Hewlett Packard Co. (H)	63.88	2.13	3.4
NYS	38.00	18.75	Silicon Graphics	35.50	-0.13	-0.4
OTC	37.63	16.25	Sun Microsystems Inc.	37.50	1.75	4.8
NYS	52.38	31.13	Tandy Corp	48.50	0.88	-1.8
OTC	11.75	11.25	Zeos International Ltd. (L)	11.25	0.00	0.0
Large Systems						
ASE	13.00	5.25	Amdahl Corp (H)	12.50	0.13	1.0
NYS	8.80	4.38	Convex Computer	4.50	-0.50	-7.7
OTC	0.22	0.16	Cray Computer	0.19	0.03	20.0
NYS	26.25	14.63	Cray Research Inc.	16.88	-0.50	-7.0
NYS	12.00	6.75	Data General Corp	7.50	0.63	7.4
NYS	46.75	38.38	Digital Equipment Corp. (H)	43.63	1.50	-3.3
OTC	5.16	1.72	Encore Computer Corp	3.69	0.00	2.4
OTC	18.50	6.50	Harris Computer Systems Corp	14.50	-0.50	-3.3
NYS	91.50	54.50	IBM (H)	91.50	5.13	5.9
OTC	12.75	5.00	NetFrame	5.00	-1.00	16.7
OTC	7.88	1.63	Parallan Computer	6.38	0.00	0.0
OTC	25.25	11.75	Sequent Computer Sys.	15.88	0.88	-5.2
OTC	5.88	3.13	Sequoia Systems Inc	3.88	0.00	0.0
NYS	39.88	23.75	Stratus Computer Inc	27.50	1.13	4.3
NYS	19.75	10.50	Tandem Computers Inc	12.63	-0.75	-5.6
OTC	14.13	3.88	TriCord Systems	4.63	-0.13	-2.6
NYS	12.13	8.75	Unisys Corp	10.38	0.13	1.2
Software						
OTC	54.50	23.75	Adobe Systems Inc.	52.38	1.13	2.1
OTC	5.88	2.50	American Software Inc	4.25	0.25	-6.9
OTC	44.00	23.25	Autodesk Inc.	36.88	-3.88	-9.5
OTC	0.63	1.75	Bachman Info. Systems (H)	5.75	-0.38	-6.1
OTC	30.25	20.75	BGS Systems Inc.	28.75	0.50	1.8
OTC	69.75	40.75	BMC Software Inc	60.50	2.00	3.2
OTC	50.50	16.50	Boole & Babbage	28.50	-0.38	1.3
OTC	14.38	6.00	Borland Int'l Inc	8.13	-0.13	1.5
OTC	22.25	5.75	Brock Control Systems Inc.	6.75	-0.25	-5.6
OTC	3.25	1.78	CE Software	3.19	0.19	6.3
ASE	26.50	6.25	Cheyenne Software Inc.	14.13	-1.75	-11.0
OTC	24.13	9.75	Cognos Inc	20.13	-1.00	-4.7
NYS	64.38	29.00	Computer Associates	58.68	-1.13	1.9
NYS	4.50	2.50	Computervision Corp	6.00	-0.13	-2.0
OTC	49.25	21.88	Compuware Corp (L)	24.75	3.00	10.8
OTC	18.75	9.00	Comshare Inc. (H)	17.50	-0.50	-2.9
OTC	16.75	10.13	Corel Corp	13.44	-0.31	2.2
OTC	16.25	7.25	Dataware Technologies Inc	15.25	0.00	0.0
OTC	5.13	1.88	Easel Corp	2.56	-0.19	-6.8
OTC	36.25	14.25	FileNet Corp	34.50	-0.08	0.2
OTC	8.75	3.00	4th Dimension	4.38	-0.38	-7.9
OTC	22.25	8.50	Frame Technology	20.13	-0.75	-3.6
OTC	35.50	13.50	FTP Software Inc.	26.25	-0.13	-0.5
OTC	10.25	7.00	Group 1 Software	9.50	0.00	0.0
OTC	23.25	8.75	Gupta	9.88	-0.25	2.5
OTC	10.75	4.63	Hogan Systems Inc	8.63	2.63	43.8
OTC	49.75	18.00	Hyperion Software Corp.	43.00	-4.00	-8.5
OTC	17.75	31.25	Information Resources	13.50	-0.38	-2.7
OTC	39.75	34.25	Informix Corp.	37.63	0.13	0.3
OTC	14.38	7.38	Intergraph Corp	31.63	-1.38	10.6
OTC	7.25	7.50	Interleaf Inc.	5.38	-0.25	-4.4
OTC	18.25	8.63	Intersolv Inc.	14.88	-0.25	1.7
OTC	79.00	27.00	Intuit Inc.	76.38	1.63	0.2
OTC	37.25	19.00	Legent Corp.	27.75	-0.38	-3.3
OTC	66.75	23.00	Lotus Development (L)	33.75	0.13	0.4
OTC	13.75	4.13	Magic Software Enterprises	5.00	0.50	11.1
OTC	14.50	6.00	Manugistics Group Inc.	11.25	-0.50	-4.3
OTC	31.75	14.75	MapInfo Corp	30.25	0.13	0.4
OTC	4.75	1.44	MathSoft	3.19	0.31	10.9
OTC	31.00	6.75	McAfee Associates	30.25	2.00	7.1
OTC	16.63	9.50	Mentor Graphics (H)	16.25	0.00	0.0
OTC	20.00	11.00	Micro Focus	13.75	0.50	4.4
OTC	8.00	4.63	Micrografx Inc.	7.25	1.13	18.4
OTC	78.13	45.44	Microsoft Corp. (H)	75.06	2.56	3.5
OTC	22.50	5.63	NetManage Inc	16.25	1.50	-8.5
OTC	34.63	19.16	Oracle Corp	30.00	2.00	-6.3
OTC	46.50	21.50	Parametric Technology (H)	46.50	1.50	3.3
OTC	24.75	9.00	ParcPlace Systems Inc	12.25	0.00	0.0
OTC	48.75	13.00	PeopleSoft	46.06	2.00	4.8
OTC	8.50	4.50	Phoenix Technologies	7.25	0.50	6.9
OTC	34.75	4.00	Platinum Software	8.13	-0.81	9.1
OTC	25.25	12.00	Platinum Technology	17.00	0.31	1.9
OTC	59.50	27.00	Progress Software Corp	43.25	-4.00	-8.5
OTC	5.08	1.88	Quarterdeck Corp	5.08	0.09	1.9
OTC	18.75	9.50	Rainbow Technologies Inc.	17.00	-0.13	-0.7
OTC	6.13	2.00	[illegible]	4.75	-0.50	-7.3
OTC	6.13	2.88	Ross Systems	4.63	-0.25	-5.1
OTC	12.00	0.50	Sapiens Intl. Corp. N.V.	3.48	0.00	0.0
OTC	29.13	10.13	Softkey International Inc	24.25	3.13	11.4
OTC	6.75	3.00	Software Publishing Corp	3.25	-0.50	13.3
OTC	12.50	5.00	State of the Art (H)	11.50	0.13	1.1
NYS	38.38	25.00	Sterling Software Inc.	34.13	0.25	0.7
OTC	13.63	3.61	Struct. Dynamics Research	12.50	0.31	2.6
OTC	57.00	19.88	Sybase Inc. (L)	21.50	1.50	-6.0
OTC	24.50	9.00	Symantec Corp.	21.00	1.00	-4.5
OTC	54.75	33.00	SynOptics	50.38	-0.43	3.2
OTC	28.00	10.63	System Software Assoc.	23.75	1.13	-8.2
OTC	7.75	3.25	Trinzic Corp	5.50	-0.19	-2.1
OTC	26.75	7.88	Viewlogic Systems	8.75	-0.13	-1.4
OTC	23.25	10.75	VMark Software Inc.	12.38	0.13	1.0
OTC	10.75	5.50	Walker Interactive Systems	7.00	0.00	0.0
OTC	35.50	17.50	Wall Data Inc. (L)	19.13	1.63	7.8
Semiconductors						
NYS	36.88	22.75	Advanced Micro Devices	33.88	1.00	2.9
NYS	28.13	16.45	Analog Devices Inc.	25.00	-1.38	-5.2
OTC	44.25	21.13	Atmel Corp (H)	42.88	0.13	0.3
OTC	8.88	3.63	Chips and Technologies	8.50	0.13	3.5
OTC	39.50	21.00	Cirrus Logic (H)	38.11	-1.00	-2.6
NYS	32.25	13.88	Cypress Semiconductor Corp.	29.00	-1.50	-4.9
NYS	20.13	13.38	Dallas Semiconductor	18.75	0.25	1.4
OTC	31.75	14.75	Integrated Silicon Systems	26.81	-1.44	5.1
OTC	97.50	56.13	Intel Corp (H)	93.88	-1.13	-1.2
NYS	59.00	19.63	LSI Logic Corp (H)	59.88	0.13	0.2
OTC	27.50	14.75	Lattice Semiconductor (H)	27.50	1.38	5.3
NYS	85.13	28.25	Micron Technology	76.88	-3.13	3.9
NYS	64.75	43.00	Motorola Inc.	52.38	2.50	-4.6
NYS	21.50	14.50	National Semiconductor	18.88	-0.38	-1.9
OTC	29.75	8.75	Sierra Semiconductor	24.88	-1.13	-4.3
NYS	98.00	61.50	Texas Instruments	91.13	-3.63	3.7
OTC	21.00	10.25	VLSI Technology (H)	20.00	0.38	1.9
OTC	4.88	1.78	Weitek	4.25	0.38	9.7
ASE	19.50	11.50	Western Digital Corp.	14.75	-0.75	-4.8
OTC	74.38	29.00	Xilinx (H)	74.38	3.88	5.5
OTC	38.75	24.75	Zilog Inc.	34.25	-3.50	-9.2
Peripherals and Subsystems						
OTC	24.50	14.50	American Power Conversion	14.00	-1.13	7.0
OTC	27.25	14.75	BancTec Inc	15.75	0.00	0.0
OTC	5.75	3.25	Cambex Corp	4.75	-0.75	13.6
ASE	3.75	1.50	Cognitronics Corp	2.81	-0.06	-2.2
NYS	16.11	8.00	Conner Peripherals	9.63	-0.50	-3.8
OTC	24.88	9.75	Creative Technologies Inc.	50.25	-0.50	-4.7
OTC	10.63	3.50	Data Race Inc. (H)	10.06	0.06	0.6
ASE	7.61	4.13	Dataram Corp	4.00	0.11	-2.4
NYS	24.00	12.50	EMC Corp	18.75	-0.38	-2.0
OTC	20.13	4.25	Emulex Corp.	17.50	-0.50	-2.7
OTC	17.50	12.25	Evans & Sutherland	16.00	0.63	4.1
OTC	24.00	11.75	Exabyte (L)	11.50	0.50	4.2
OTC	8.63	3.88	Intelligent Info. Systems	2.50	-0.13	-4.8
OTC	11.75	1.59	Iomega Corp	50.63	0.75	2.4
OTC	7.50	2.50	IPL Systems Inc	4.00	-0.18	-4.5
OTC	36.00	17.00	Komag Inc. (H)	35.88	0.00	2.5
OTC	7.25	2.61	Maxtor Corp	5.00	0.44	8.6
OTC	11.50	4.00	Micropolis Corp	5.25	0.13	2.4
OTC	17.75	9.25	Pinnacle Micro Inc.	12.50	-0.25	-2.0
OTC	28.75	5.31	Printronix Inc.	19.75	0.50	2.6
NYS	10.75	5.25	QMS Inc	6.13	0.13	2.1
OTC	19.38	11.61	Quantum Corp	17.88	0.61	-3.4
OTC	15.00	7.50	Radius Inc	10.25	-0.75	-6.9
NYS	10.41	8.38	Recognition International	7.00	0.25	3.7
OTC	7.00	4.11	Rexon Inc	4.25	-0.38	-7.3
OTC	30.13	18.63	Seagate Technology (H)	28.75	-0.38	-1.1
NYS	39.13	17.88	Storage Technology	18.50	-0.38	-4.6
NYS	45.25	27.38	Tektronix Inc (H)	44.50	-0.38	0.8
NYS	120.50	90.63	Xerox Corp	119.21	4.00	3.5
Services						
OTC	21.88	13.16	American Mgmt. Systems	19.50	1.25	6.8
NYS	4.25	1.50	Anacomp Inc (L)	1.38	-0.13	[illegible]
OTC	27.00	14.50	Analysts Int'l (H)	25.00	0.25	3.0
NYS	65.50	40.13	Auto Data Processing	62.00	-1.50	-3.0
OTC	36.25	14.00	Cambridge Tech. Partners	30.50	-0.50	-1.6
NYS	34.50	22.00	Ceridian Corp.	33.38	-0.50	1.1
NYS	27.00	12.75	Comdisco Inc.	26.75	-0.50	-1.8
OTC	19.00	8.25	Computer Horizons	18.00	0.50	2.9
NYS	52.63	36.50	Computer Sciences	47.50	-1.00	3.3
NYS	12.13	7.50	Computer Task Group	31.25	-0.13	1.1
NYS	21.00	6.75	CompUSA Inc.	22.50	0.50	2.4
OTC	11.38	5.38	Control Data Systems Inc.	8.50	0.75	9.7
OTC	12.11	6.13	Egghead Discount Software	8.94	-0.19	-3.1
NYS	41.38	32.88	General Motors E (EDS)	41.38	1.38	3.4
OTC	14.75	6.88	Inacom Corp	8.50	0.25	3.0
OTC	23.75	7.50	Intelligent Electronics	50.13	-0.06	-0.6
OTC	18.38	3.88	Medisel	5.63	0.00	0.0
OTC	28.75	8.50	Microage Inc.	9.00	-0.38	-4.0
OTC	48.75	18.50	Paychex	49.50	-0.06	-0.1
NYS	51.19	27.00	Policy Management Sys. (H)	49.11	-2.00	3.9
NYS	28.63	19.75	Reynolds and Reynolds	26.63	1.50	-6.3
OTC	24.75	16.75	SEI Corp	18.50	0.25	1.4
OTC	37.88	22.13	Shared Medical Systems	30.88	1.13	5.2
OTC	8.00	4.00	SHL Systemhouse	6.44	-0.06	-1.0
OTC	21.50	9.25	Software Spectrum Inc.	15.13	1.88	11.0
OTC	48.75	33.75	SunGard Data Systems	40.75	0.00	0.0

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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Terabyte

CONTINUED FROM COVER 1

mongous databases are expected to become more common as disk storage gets cheaper and data warehouses, images and video gain wider acceptance.

But the number of companies exploring the terabyte stratosphere now "could probably be counted on your fingers and toes," said Nagraj Alur, a principal at Database Associates International in Morgan Hill, Calif.

Living large

A sampling of user companies with very large databases

Company	Database size	Platform
Wal-Mart	4T bytes	Teradata
UPS	3T bytes; 2T bytes	DB2
Ameritech	1.6T bytes	NonStop SQL
TRW	1.6T bytes	DB2/Oracle
Kmart	1T byte	Teradata
Mervyn's (division of Dayton-Hudson Corp.)	700G bytes	Oracle

It is not for the faint of heart or the light of wallet, according to IS officials developing or managing such big databases. These users, some of whom will speak at a conference on very large databases in New Orleans this week, rattled off the following list of potential trouble spots:

- The database must be painstakingly configured and tuned to yield fast response times without making data management and recovery unwieldy.
- End-user access must be tightly controlled to ensure that the database does not become overloaded.
- Backups and updates usually must be done in stages to minimize downtime.
- The cost of disk storage, testing and outside help can be daunting.

"The design almost never stops," said John Killeen, data resource manager at United Parcel Service, Inc.'s Mahwah, N.J., data center, which runs two multiterabyte databases and has a third under development. Building a megadatabase "is a large chore," he added. "Once we get it in place, we'll all go out and get a beer."

Even then, the design process "is an ongoing effort because we have to make sure we keep the data tuned" after updates, he said.

UPS splits each of the 64G-byte tables in its DB2 databases into 50 separate partitions so it can do staged backups during the day. Trying to back up the databases en masse "would kill us," Killeen said. The staged approach lets the company limit daily downtime to the three to four hours it takes to load new package delivery data into DB2.

Ameritech Small Business Services, a unit of Ameritech Corp. in Chicago, devotes 16 of the 48 processors in Tandem Computers, Inc.'s Himalaya system to cleaning up phone records before they go into Ameritech's decision-support database. Crunching the daily load of 260 million calls takes four to six hours, said Michael Patrick, director of IS at the small business operation.

"You pay your dues later if you don't watch what you're doing up-front," Patrick said. Once the data is loaded, queries are prioritized by IS to avoid straining resources, he added. "There are a million details [to managing a large database]. You can go crazy looking at all of them."

Besides the initial outlay for hardware, software and mirrored storage, Ameritech expects the database to soak up $2 million a year in personnel and network costs, Patrick said. "It's not cheap."

Unix abandoned

TRW has spent "a lot more than we originally planned" on its new consumer credit information database, which is in final testing, said Helen McMillan, chief database architect at TRW Information Services. That is partly because the company tried to do a Unix design before switching to a DB2 approach, she said. It is also relying heavily on outside contractors.

Wanting to avoid downtime except for a few hours on weekends, TRW "partitioned the heck out of" the database to allow piecemeal updates and backups, McMillan said. However, partitioning the database required TRW to build a layer of code to hide the physical splitting of data from applications.

AT&T Corp.'s consumer long-distance unit in Basking Ridge, N.J., is wrestling just to get customer records into a new decision-support database. The data is coming from a variety of independent systems, "and all those pieces don't always fit readily together," said Steve Kormeluk, the operation's IS manager.

Dealing with such core issues is critical because even ordinary problems such as inefficient queries can paralyze a large database, said Richard Winter, president of Winter Corp., a consulting firm in Cambridge, Mass. "It's like mountaineering in the Himalayas. Tiny errors can be fatal."

Parallel offerings remain uneven. See page 152.

Unix catches up

Unix-based databases have yet to hit the mondo sizes of proprietary systems such as DB2 and Teradata.

Although some vendors have made strides in adding parallel features to their Unix databases, capabilities such as backup and recovery are still not up to snuff, analysts said.

Still, some intrepid Unix shops are trying. For example, Corning Clinical Laboratories, Inc. has a 300G-byte database in the works to track blood test data for several hundred hospitals nationwide. Instead of building a monster database, Corning plans to distribute databases from Sybase, Inc. across 30 Hewlett-Packard Co. T500 servers.

With 20G bytes in production at the lab's Teterboro, N.J., headquarters, the project "is moving, but we're not rushing anything," said David Wick, director of application development.

The in-house staff's lack of large database know-how prompted Corning to buy expensive consulting services, he added. Indeed, $6 million of the $10 million spent so far went to consultants.

—Kim S. Nash

Cabletron

CONTINUED FROM COVER 1

for administering NetWare LANs accessible from the Unix-based Spectrum.

MGS for NetWare, which can manage up to 150 NetWare servers, will be announced next month and is slated to ship in the fall, according to Patricia Chrystycz, Cabletron's director of network management marketing.

Beta testing is under way at Novell and large NetWare sites where managers running Spectrum seek quick graphical access to every NetWare server's functions, print queues, users and groups. MGS for NetWare allows these managers to gain NetWare's alarms, statistics and control without adding new protocols, modifying servers or leaving the Spectrum console to wade through Novell's administration menus on a PC.

Consolidated advantage

Spectrum users such as Mark Pielocik, senior network management analyst at Bose Corp. in Framingham, Mass., were enthusiastic about the prospect of consolidating their management chores.

"I'll be able to take advantage of the gateway immediately. It will save us time because we won't have to load any NLMs or inject TCP/IP into the Novell servers," Pielocik said. "I'll be able to manage the NetWare LANs natively without worrying about conflicts in configuration and setups. You never want any more overhead on the server than is necessary."

Also eager to see MGS for NetWare was Michael Knutson, a systems manager at Hewitt Associates, a benefits consulting firm in Lincolnshire, Ill. Knutson said he would like to manage all his diverse servers — NetWare, OS/2, Unix and Notes — from one location with a common database instead of gathering data from separate tools and assembling it on the mainframe for automated status reports. "I don't have time to create reports on 40 servers every day in Windows."

All enterprise management vendors have the same goal: to make networks easier to monitor and control in order to lower costs. For Cabletron, MGS for NetWare will fulfill the 4-year-old vision that Spectrum is more than just a manager of hubs and other network elements.

"MGS is the second phase of our strategy as we move up in enterprise management," said Joe Massey, senior manager for Spectrum development at Cabletron, which is based here. The first phase was Version 3.0 of Spectrum, which added the newly defined host Management Information Base (MIB) for reporting via the Simple Network Management Protocol. Few users rely on that MIB yet, Massey said, because agents are not available for many target systems.

To leap that hurdle, the new gateway will let Spectrum interact with the installed base of NetWare servers by tapping into the management data available via Novell's IPX protocol. No NetWare Loadable Modules (NLM) or changes are needed on target NetWare servers, said Gene Dragotta, project leader.

A hardware module processes both IPX and TCP/IP stacks, translates the data and presents it to the software module on Spectrum. This system also authenticates each task, Dragotta said, to make sure whoever is adding users or changing a server's configuration has the proper security clearance.

Higher demand, usage

MGS for NetWare, when coupled with Spectrum's existing object-oriented and distributed management capabilities, will translate into high user demand and usage, said Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J.

"Most businesses view network management the same way they look at fluoride toothpaste: They like to know it's available, but they don't necessarily use it as much as they should," Nolle said. "Spectrum usage is on a steep increase because it's straightforward and provides businesses with a hub-based or LAN-centric approach to management."

This is in sharp contrast to WAN-based management packages such as Hewlett-Packard Co.'s HP OpenView or IBM's NetView 6000, which have traditionally excluded most LAN traffic, Nolle said.

The entry-level price of MGS for NetWare will be in the "$15,000 range," Chrystycz said. This includes the software to add to Spectrum and the choice of gateway hardware: a module to fit Cabletron's MMAC or MMAC Plus hubs or a stand-alone unit.

Parallel offerings remain uneven

Although they sometimes talk the same talk, Oracle, Sybase and Informix vary widely in how thoroughly they have parallelized their database management systems.

Moving to parallel processing is one of the few giant steps you can take toward computer productivity. However, unless your IS shop is willing to poke its nose under the hood and ask the right questions, you may end up with less of a benefit from moving to parallel than you had planned.

There are two places where the differences among the vendors stand out in high relief: table partitioning and query optimization. In table partitioning, Informix and Sybase have an edge, although Sybase offers it only through Navigation Server on the AT&T 3600 multiprocessor.

In query optimization, Informix may have an edge over Oracle, although much depends on the skill of the database administrator and the application in use. Sybase's query optimization is also impressive with Navigation Server on a multiprocessor AT&T 3600. But the bulk of Sybase's customers do not use Sybase on a 3600, and they will have to wait until the third quarter of this year for Navigation Server to become available on IBM, Hewlett-Packard and Sun Microsystems platforms.

Until Navigation Server becomes generally available, Sybase's parallel features are limited to using low-end symmetrical multiprocessors with four to six CPUs. Much of Sybase's recent sales slowdown and losing quarter has to be attributed to this underpowered approach.

In some cases, Oracle's query optimizer, with its ability to be guided by hints from the database administrator, will offer advantages in a decision-support setting. With decision support, it is difficult for the database administrator to anticipate the nature of the query and, therefore, know how to partition tables for ease of access.

Oracle has had the highest profile in moving to parallel and has dubbed Oracle7.1 as Parallel Everything, although knowledgeable users cast doubt on the appropriateness of the name. Like the others, Oracle cannot do the SQL commands INSERT, UPDATE and DELETE in parallel, and, as noted before, its optimizer has little parallel intelligence without hints from the database administrator.

Informix's strength lies in its shared-nothing approach, which partitions data across CPUs and the disk drives assigned to each CPU. The database administrator determines how the data is to be spread across the set, and the system simultaneously stores and retrieves streams of data without being restricted to the speed of a single disk drive or CPU. Sybase's Navigation Server performs a similar feat (on the 3600), giving multiple processors a single image for data partitioning purposes.

> Moving to parallel processing is one of the few giant steps you can take toward computer productivity.
>
> Charles Babcock

Oracle officials find virtue for their system in the absence of this feature, although it seems like Informix and Sybase had the tougher engineering job. Oracle7.1.6 treats the available memory and storage as a virtual pool, with all processors sharing it. Oracle vice president Ken Jacobs points out that this gives Oracle a high degree of availability. A processor can fail and other processors can still access the data.

The Informix/Sybase style of partitioning appears best suited to applications with data flows that are predictable and well understood, as might be found in an on-line transaction processing system, so the flow can be effectively spread out across disks.

Effective query optimization remains something of a black art. The optimizers found in Informix and Sybase's Navigation Server make use of a number of sophisticated rules of parallelism, according to Jim Gray, former Tandem and Digital specialist in parallel databases and now a research fellow at the University of California at Berkeley. Oracle's system, on the other hand, with its reliance on "hints," is "quite primitive," Gray said.

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Inside Lines

Scaling Mt. Everest

The Santa Cruz Operation had its collective lips zipped last week about plans to unveil its next Unix-on-Intel operating system release, code-named Everest. Now in 1,000 beta sites worldwide, the Everest code is intended to do battle with Novell's new UnixWare 2.0 symmetrical multiprocessing Unix-on-Intel operating system, released in January. Company officials declined to confirm details about the announcement, where some 30 key partners will reportedly join the company on stage, but other sources said it would be on May 4 at New York's Hudson Theater. Popcorn, anyone?

We prefer Air Jordan

What's in a name? The word Air, if you play in the wireless business. Sources say Motorola will continue the trend next week when it announces Air Apparent, a software tool to bring paging messages into the corporate network. Motorola expects this to spark a new wave of wireless use. Of course, with that lame name, they could end up shooting an air ball.

Cheaper notebooks on the way

Intel's announcement of its 60/90-MHz mobile Pentium chip has slipped a week to May 30, industry sources said last week. But price drops on the 486 are right on schedule, say sources at hardware makers. In fact, Intel is accelerating price reductions on its 486s in order to speed the notebook market to Pentium.

Are they sharing more than parking lots?

The perpetual rumor that "(insert company name here) is making a takeover bid for tools maker Gupta" landed in Informix's back yard last week. An Informix official denied the database company is seeking to buy Gupta, adding that perhaps such talk started because their offices are right next to each other in Menlo Park, Calif.

This doesn't look like Kansas

Mainframe wanna-bes in Unix shops will soon be able to eyeball some bona fide System/390-class disk storage. EMC plans in late May or June to introduce Unix versions of its fast-selling Symmetrix mainframe arrays, which provide caching and performance that goes where no open systems ever have. But EMC's ability to pull Unix users down its yellow brick road will likely hinge on where Open Symmetrix pricing lands.

Let's get flat

Jerome York, IBM's chief financial wizard, has certainly changed his tune since forecasting in early '94 that mainframe revenue was about to fall off a cliff. Big-iron shipments instead surged, and now York is not ruling out the possibility that IBM will be able to hold its 1995 System/390 revenue at last year's level. Still, he cautioned last week that Big Blue "would really have to ship a lot" of its new CMOS-based mainframes to keep things on an even keel.

Anytime, anywhere, anyhow

AT&T is about to step out of the shadows and leap into the on-line commercial services frenzy. The AT&T Interchange Online Network, which Ma Bell acquired from Ziff-Davis last November, will make its debut in June as an on-line publishing platform for content providers. AT&T has already lined up *The Washington Post*, Ziff-Davis and Cowles Business Media as participants in the venture, which is expected to compete with America Online, Prodigy and CompuServe, according to Leslie Laredo, director of advertising development at AT&T in Cambridge, Mass.

What do Oracle and the U.S. military have in common? A soft spot for Gen. Norman Schwarzkopf. Stormin' Norman now spends his time on the rubber-chicken circuit giving inspirational speeches. The Oracle Applications User Group, which met last week in Nashville, was evidently willing to pony up Norm's fee, even though the general knows zip about client/server applications, a group official acknowledged. But if you know a thing or two and would like to share a news tip with Computerworld, *do call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News Editor Maryfran Johnson can be reached by phone at (508) 820-8179 or via the Internet at mjohnson@cw.com.*

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